Vol. 929 Number 2

OFFICIAL GAZETTE

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PATENTS

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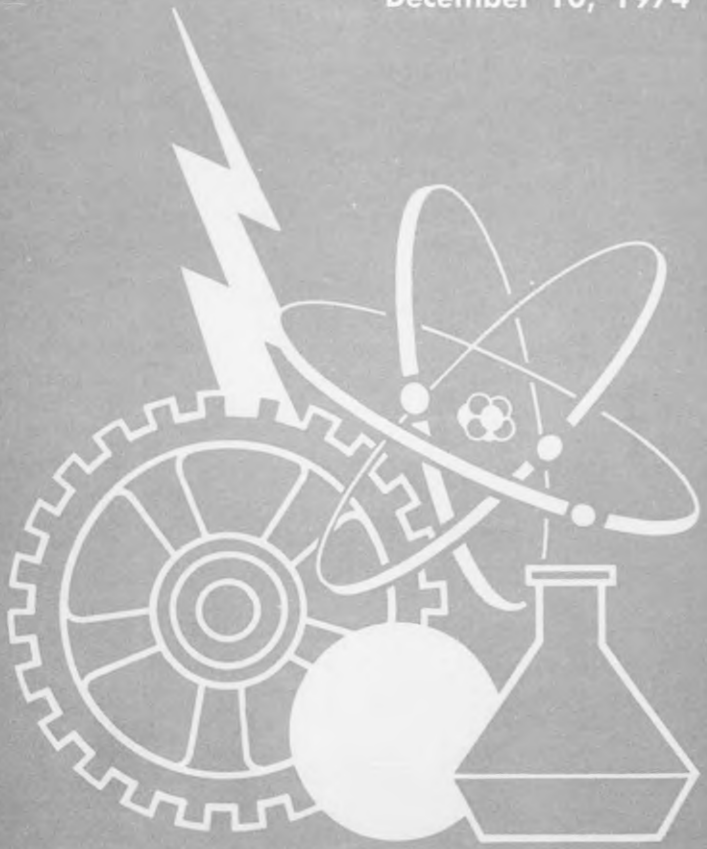

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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

December 10, 1974 Volume 929 Number 2

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PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before December 23, 1974.

Carson, William S., 3754 Valley Drive, Alexandria, Va. 22302

Olsen, Warren E., 2608 Davis Ave., Alexandria, Va. 22302

Tushin, Richard H., 1405C N. Van Dorn St., Alexandria, Va. 22304

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Realignment of Patent Office Handling of Opposition Papers

In order to increase efficiency in processing papers, all activities connected with the handling of oppositions have been transferred from the Trademark Examining Operation to the Trademark Trial and Appeal Board. As a result of the transfer, requests for extension of time to oppose and matters pertinent thereto are now received and processed by the staff of the Trademark Trial and Appeal Board rather than by the staff of the Office of the Director of the Trademark Examining Operation.

No substantial change in procedure in the handling of papers relative to oppositions and extensions of time is contemplated by this realignment of duties in the Patent Office. Reasonable requests for extensions of time to oppose will continue to be granted with liberality particularly if there is no protest by another party and if the parties are negotiating or otherwise exploring bases for settlement, and fees for both verified and unverified oppositions will continue to be required to be filed within the time prescribed for opposing.

RENE D. TEGTMEYER,
Nov. 14, 1974. *Assistant Commissioner for Trademarks.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,542,892, J. R. Bayston, MACHINE FOR MANUFACTURING ICE; **2,612,030,** C. E. Ploeger, REFRIGERATION; **2,613,506,** D. R. Cook, ICE-MAKING MACHINE; **2,740,265,** J. R. Bayston, MACHINE FOR MANUFACTURING ICE CUBES; **2,763,993,** same, ICE CUBE MANUFACTURING APPARATUS, **filed** Sept. 29, 1966, D.C., S.D.N.Y., Doc. 66–C–3140, *Uniflow Manufacturing Company et ano.* v. *Custom Bins, Inc. et al.* Filed final consent judgment; defendants except for Dwyer are hereby enjoined as indicated, entered Jan. 4, 1974.

2,543,684, R. L. Blanchard, EXPLORER'S FOLDING TENT, **filed** June 6, 1963, D.C., S.D.N.Y., Doc. 63–C–1654, *Robert Blanchard* v. *Sears, Roebuck & Co., Inc.* Stipulation and order of dismissal with prejudice, June 9, 1969.

2,544,246, G. H. Butterfield, CORNEAL CONTACT LENS, **filed** Sept. 15, 1969, D.C., S.D.N.Y., Doc. 69–4020, *George H. Butterfield Sr.* v. *Optimum Contact Lenses Inc.* Filed letter and order transferring case to the Northern District of Illinois, Feb. 9, 1970.

2,600,951, B. F. Edwards, CARD GAME EQUIPMENT, **filed** May 20, 1963, D.C., S.D.N.Y., Doc. 63–C–1441, *Magnetic Cards of California, Inc. et ano.* v. *Regal & Wade Mfg. Inc. et ano.* Filed stipulation and order of dismissal with prejudice, Mar. 17, 1966.

2,612,030. (See 2,542,892.)

2,613,506. (See 2,542,892.)

2,632,962, Jacobson and Keljikan, EDUCATIONAL DEVICE, **filed** Dec. 12, 1967, D.C., S.D.N.Y., Doc. 67–C–4867, *John G. Keljikan* v. *Dyna Ray Corp.* Filed order dismissing action for lack of prosecution, Sept. 17, 1970.

2,728,779, A. Pohland, ESTERS OF SUBSTITUTED AMINOBUTANES, **filed** Dec. 2, 1969, D.C., S.D.N.Y., Doc. 69–5329, *Ellencee Pharmaceutical Laboratories Inc.* v. *Eli Lilly & Co. Inc.* Filed stipulation and order of discontinuance with prejudice, Apr. 2, 1973.

2,738,144, F. Honig, TEXTILE PACKAGE, **filed** Aug. 15, 1969, D.C., S.D.N.Y., Doc. 69–3608, *Stress Strand Corporation* v. *Allied Chemical Corporation.* Filed consent order that plaintiff's complaint and defendant's counterclaim are dismissed with prejudice, June 24, 1971.

2,740,265. (See 2,542,892.)

2,763,993. (See 2,542,892.)

2,824,946, Katzman and Block, ELECTRIC VAPORIZERS, **filed** June 15, 1970, D.C., S.D.N.Y., Doc. 70–C–2498, *Kaz Manufacturing Co., Inc.* v. *Greatwood Products, Inc.* Filed notice of settlement and order; ordered that plaintiff will grant a nonexclusive non-transferable license to the defendant, Nov. 27, 1970.

2,827,913, W. Wagner, SELF-TAPPING VALVE FOR TUBES, PIPES, TANKS AND OTHER CONDUITS AND CONTAINERS, **filed** Oct. 8, 1963, D.C., S.D.N.Y., Doc. 63–C–2926, *Watsco Inc.* v. *Henry Valve Co., Inc.* Filed judgment in favor of plaintiff, Dec. 27, 1967.

2,877,573, G. W. Kenyon, TRIPPING DEVICES FOR SNOW PLOWS, **filed** Apr. 2, 1973, D.C., S.D.N.Y., Doc. 73–1361, *Frink Sno-Plows, Inc.* v. *Samson Hydraulics.* Filed Stipulation and order, action is dismissed without prejudice, May 18, 1973.

2,944,627, C. W. Skarstrom, METHOD AND APPARATUS FOR FRACTIONATING GASEOUS MIXTURES BY ADSORPTION, **filed** Sept. 8, 1967, D.C. Conn. (New Haven), Doc. 12140, *Esso Research & Engineering Company* v. *Kahn & Company, Inc. and Chandler-Evans, Inc.* Judgment declaring patent invalid, with costs to defendants, entered May 2, 1974.

2,972,188, W. Kaufman, MAKING GRADED PATTERNS FOR GARMENTS, **filed** Feb. 9, 1966, D.C., S.D.N.Y., Doc. 66–C–396, *William Kaufman, doing business as Precision Pattern* v. *Willcox and Gibbs Inc.* Filed order discontinuing action without costs, Apr. 18, 1973.

2,974,432, Warnock and Hubener, PRESS-FREE CREASE RETAINED GARMENTS AND METHOD OF MANUFACTURE THEREOF; **3,268,915,** same, PROCESS OF MANUFACTURING PRESS-FREE GARMENT WITH RETAINED CREASES, **filed** June 20, 1967, D.C., S.D.N.Y., Doc. 67–C–2383, *Deering Milliken, Inc.* v. *Koratron Company, Inc.* Filed letter and order of Multi-District Court Litigation panel transferring case to Northern District of California, June 25, 1969.

2,987,735, W. P. Nail, CONTROL OF INFLATABLE ARTICLES; **3,029,109,** same; **3,110,532,** same, INFLATABLE ARTICLES, **filed** July 23, 1970, D.C., S.D.N.Y., Doc. 70–C–3168, *Walter P. Nail* v. *Contempo Sales.* Stipulation of dismissal, Nov. 24, 1970.

3,029,109. (See 2,987,735.)

3,110,532. (See 2,987,735.)

3,165,045, J. H. Troll, DATA PROCESSING SYSTEM, **filed** Sept. 22, 1969, D.C., S.D.N.Y., Doc. 69–4144, *Itek Corporation* v. *RCA Corporation.* Filed stipulation of dismissal pursuant to Rule 41(a), May 22, 1971.

3,268,915. (See 2,974,432.)

3,353,528, D. E. Robinson, HEATER CONSTRUCTION; **Re. 27,392,** same, **filed** July 29, 1974, D.C., N.D. Ind. (South Bend), Doc. S74–161, *Mobil Temp, Inc.* v. *La Salle-Deitch Company, Inc.*

3,462,688, W. E. Abel, COMMUNICATION SYSTEM FOR CLASSROOM USE AND THE LIKE; **3,474,451,** same, LOOP ANTENNA CIRCUIT COUPLING MULTIPLE TRANSMITTERS, **filed** Mar. 31, 1970, D.C. Conn. (New Haven), Doc. 13773, *Audio Trainer, Inc.* v. *MPC Educational Systems, Inc. et al.* Consent final decree by plaintiffs and defendants declaring infringement of patents and enjoining defendants from further infringement, entered July 2, 1974.

3,474,451. (See 3,462,688.)

3,500,938, J. V. Watson, UNIVERSALLY MOUNTED DRILLING MAST; 3,513,920, same, **UNDERREAMER, filed** Aug. 9, 1974, D.C., N.D. Tex. (Fort Worth), Doc. CA–4–74–211, *Watson, Incorporated* v. *Strata Drill, Incorporated.*

3,513,920. (See 3,500,938.)

3,515,141, E. R. Black, FOUNDATION GARMENT; 3,515,143, same, **filed** June 2, 1970, D.C., S.D.N.Y., Doc. 71–C–3578, *Flexnit Company, Inc.* v. *Figur Flattery Brassiere, Inc.* Filed stipulation of dismissal, Mar. 13, 1972.

3,515,143. (See 3,515,141.)

3,572,245, B. W. Grayson, APPARATUS AND METHOD OF CONDUCTING STRING SHOT OPERATIONS; 3,618,612, same, **METHOD OF CONDUCTING STRING SHOT OPERATIONS IN AN OIL WELL, filed** Mar. 13, 1973, D.C., E.D. Calif. (Fresno), Doc. F–776–C, *Bobby W. Grayson* v. *Don McGowan, Melvin McGowan, et al.* Judgment entered against plaintiff, ordered claims 6 thru 10, 14, 22, 24, 27 thru 32 of Patent No. 3,572,245 invalid. Ordered claims 1, 3 thru 6 and 25 of Patent No. 3,648,612 invalid, July 26, 1974.

3,610,815, Gould, Lieberman and Sarabia, **MOTION PICTURE FILM COLOR CORRECTION SYSTEM AND METHOD, filed** Oct. 27, 1971, D.C., S.D.N.Y., Doc. 71–C–4681, *Teletronics International, Inc.* v. *Reeves Telecom Corp.* Filed order of discontinuance, Nov. 21, 1973.

3,627,177, Marcus and King, **DISPENSER COMBINED WITH HANGING CLIP FOR INVERTED SUPPORT, filed** May 17, 1972, D.C., S.D.N.Y., Doc. 72–C–2100, *Knomark Inc.* v. *Neptune Chemical Corp. of America.* Filed Stipulation and order of dismissal, May 23, 1974.

3,648,612. (See 3,572,245.)

3,670,611, D. J. Jarman, **SHEAR DISCHARGE CONVEYING SYSTEM, filed** Aug. 1, 1974, D.C., E.D. Tex. (Sherman), Doc. 8–74–59–CA, *Continental M.D.M., Inc.* v. *Hadco, Inc.*

Re. 27,392. (See 3,353,528.)

2,724,720, Berger and Ludwig, **DICARBAMATES OF SUBSTITUTED PROPANE DIOLS, filed** Sept. 14, 1967, Court of Claims (District of Columbia), Doc. 322–67, *Carter-Wallace, Inc.* v. *The United States.* Suit for infringement of Claims 1 and 4 in U.S. Patent 2,724,720 covering compound with generic name "meprobamate." Defendant's motion for summary judgment granted. Plaintiff estopped since patent previously held invalid in another suit in Second Circuit. Petition dismissed May 15, 1974.

2,877,609, Bodolay and Bodolay, **MACHINE FOR MAKING BAGS FROM A CONTINUOUS WEB, filed** May 22, 1974, D.C., M.D. Fla. (Tampa), Doc. 74–281–C T.K., *Bodolay Packaging Machinery, Inc.* v. *Action Packaging Machinery, Inc. et al.*

2,940,530, W. H. Du Shane, **DRAFT LOAD CONTROL FOR TRACTORS, filed** May 5, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1317, *Deere & Company* v. *Ford Motor Company et al.* Order of dismissal, ordered that plaintiff's complaint is dismissed without prejudice, May 31, 1974.

3,011,920, C. R. Shipley, Jr., **METHOD OF ELECTROLESS DEPOSITION ON A SUBSTRATE AND CATALYST SOLUTION THEREFOR, filed** Nov. 13, 1973, D.C., E.D. Mich. (Detroit), Doc. 4–70661, *Shipley Co., Inc.* v. *Oxy Metal Finishing Corp.*

3,077,363, R. H. Mesinger, **CYCLE SADDLE COVERS, filed** May 22, 1974, D.C., S.D. Fla. (Miami), Doc. 72–1400 C–Cf, *Robert H. Mesinger and Mesinger Manufacturing Company, Inc.* v. *Western Auto Supply Company et al.* Judgment, it is hereby ordered that plaintiff take nothing and that the action be dismissed on the merits with prejudice to plaintiffs. That as to defendants' counterclaim, patent is valid and has been infringed, May 22, 1974.

3,093,177, J. P. Villo, **THREAD LOCK AND METHOD OF MAKING THE SAME, filed** June 4, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c1514, *USM Corporation* v. *Standard Pressed Steel Co.*

3,128,737, E. M. Usab, **FLOATING WHARF STRUCTURE; Re. 23,837,** same, **FLOATING WHARF STRUCTURE MADE OF CONCRETE FLOAT UNITS, filed** June 6, 1974, D.C. Calif. (San Francisco), Doc. C–74–1208 RHS, *Waterpavers International Inc. et al.* v. *American Terrazzo et al.*

3,152,499, H. Moelbert, **METHOD AND APPARATUS FOR SHEARING USING MOMENTARILY APPLIED SUPPORTING AND CLAMPING FORCES OF GREAT MAGNITUDE, filed** June 3, 1974, D.C., W.D.N.Y. (Buffalo), Doc. C–74–268, *Buffalo Forge Company* v. *Advanced Machine Design Company and Heinrich Moelbert.*

3,212,062, Goldman and Katz, **CHECK AUTHORIZATION SYSTEM; 3,394,246,** R. N. Goldman, **STATUS-INDICATING SYSTEM; 3,407,388,** same, **CUSTOMER SERVICE UNIT; 3,610,889, IDENTIFICATION CARD CONTROL SYSTEM, filed** Apr. 30, 1974, D.C., C.D. Calif. (Los Angeles), Doc. CV74–1172–MML, *Telecredit, Inc.* v. *TRW Inc. and TRW Data Systems, Inc.*

3,305,189, Butler, Jr. and Pierce, **WEB SUPPLY APPARATUS, filed** May 22, 1974, D.C., N.D. Ill. (Freeport), Doc. 74c35, *Butler Automatic, Inc.* v. *Martin Automatic, Inc.* Cause dismissed on notice of plaintiff before answer by defendant, June 7, 1974.

3,372,816, W. G. Atwater, **DETECTING DEVICE FOR IMPROPERLY POSITIONED LOADS IN AN AUTOMATIC WAREHOUSING SYSTEM; 3,389,814,** J. H. Lemelson, **LOAD RESPONSIVE CONTROL MEANS FOR A MATERIAL HANDLING APPARATUS; 3,402,835,** S. Saul, **CONTROL SYSTEM FOR A ZONED AUTOMATIC WAREHOUSE ARRANGEMENT; 3,486,640,** J. H. Lemelson, **MULTI-SPEED CONTROL SYSTEM FOR A LOAD CARRIER IN A WAREHOUSE SYSTEM, filed** Aug. 6, 1973, D.C., N.D. Ohio (Cleveland), Doc. C73–820, *The Triax Company* v. *TRW, Inc.*

3,389,814. (See 3,372,816.)

3,394,246. (See 3,212,062.)

3,402,835. (See 3,372,816.)

3,407,388. (See 3,212,062.)

3,486,640. (See 3,372,816.)

3,525,457, Hausmann and Hausmann, **DEVICE FOR HOLDING AND EMPTYING TUBES, filed** Sept. 15, 1971, D.C., S.D.N.Y., Doc. 71–C–4107, *Else Hausmann and Heinrich Hausmann* v. *Alfred E. Knobler & Company, Inc.* Filed stipulation and consent that action is settled without prejudice, Oct. 2, 1973.

3,581,865, G. C. Adams, **INCLINED TRANSFER STATION, filed** July 21, 1972, D.C., W.D.N.Y. (Buffalo), Doc. C–1972–386, *Diamond Machinery Co.* v. *Speedways Conveyors, Inc.* Order action dismissed without prejudice, May 29, 1974.

3,605,178, E. E. Hoffmann, **LOIN PULLING KNIFE, filed** Nov. 14, 1972, D.C. Minn. (St. Paul), Doc. 3–72–C–313, *Edwin E. Hoffmann* v. *Swift & Company.* Filed stipulation of dismissal of action with prejudice, May 2, 1974.

3,616,889. (See 3,212,062.)

3,619,675, S. M. Baker, **CONTROL ROD DRIVE MECHANISM, filed** Oct. 23, 1973, D.C. Calif. (Los Angeles), Doc. 73–2475–DWW, *Royal Industries, Inc.* v. *Babcock & Wilcox Co. and Diamond Power Specialty.* Filed order that the motion of defendant Babcock & Wilcox to dismiss the complaint for lack of venue be granted, and the complaint is dismissed as to all defendants and further order that the motion for consolidation in this action with Civil Action No. 73–2763 is moot and taken off calendar, entered May 31, 1974.

3,629,931, J. M. Stanley, **METHOD AND APPARATUS FOR NAILING A STRUCTURAL FRAME, filed** June 3, 1974, D.C., N.D. Ga. (Atlanta), Doc. C74–1078A, *Multi-Systems, Inc.* v. *Staple Fastener Company et al.*

3,630,505, B. R. MacKay, **SILVER RECOVERY; 3,744,995,** same, **filed** June 11, 1974, D.C. Colo. (Denver), Doc. 74–M–510, *Byron R. MacKay* v. *C. & S., Inc. and James Blackburn.*

3,663,233, J. L. Keszler, **METHOD OF TENDERIZING, CURING AND COOKING A MEAT PRODUCT, filed** Oct. 11, 1972, D.C. Conn. (New Haven), Doc. 15378, *Julius L. Keszler* v. *K-T Corporation and Keszler Corporation.* Stipulation for dismissal of action filed and ordered May 9, 1974.

3,702,100, T. P. Wharton, **MOLDED PALLET, filed** Apr. 24, 1973, D.C., W.D. Mich. (Grand Rapids), Doc. G106–73 Cal, *Menasha Corporation* v. *Jarecki Corporation and Plastics of Grand Rapids.* Case dismissed on May 6, 1974.

3,744,995. (See 3,630,505.)

Re. 24,837. (See 3,128,737.)

Certificates of Correction for the Week of Dec. 10, 1974

Re. 28,154	3,785,881	3,818,973	3,831,478
D. 223,046	3,785,886	3,819,025	3,851,587
3,507,339	3,786,120	3,819,327	3,831,870
3,542,931	3,786,463	3,819,439	3,831,917
3,644,311	3,788,286	3,819,853	3,832,124
3,646,173	3,789,100	3,820,717	3,832,174
3,664,255	3,789,196	3,821,235	3,833,037
3,698,210	3,791,466	3,821,248	3,833,130
3,698,809	3,792,321	3,821,641	3,833,363
3,702,617	3,795,204	3,822,071	3,834,166
3,705,926	3,795,404	3,822,354	3,834,440
3,710,890	3,797,830	3,822,468	3,835,138
3,721,298	3,798,453	3,822,648	3,835,683
3,723,400	3,799,037	3,822,650	3,835,851
3,727,949	3,800,292	3,822,726	3,836,200
3,730,797	3,803,456	3,822,743	3,837,287
3,735,402	3,804,022	3,822,960	3,837,459
3,735,989	3,804,073	3,823,269	3,837,474
3,742,379	3,804,985	3,824,498	3,837,657
3,743,632	3,807,207	3,824,632	3,837,789
3,745,901	3,807,284	3,825,090	3,837,939
3,753,865	3,808,388	3,826,481	3,838,040
3,755,492	3,808,795	3,827,156	3,838,169
3,761,004	3,809,457	3,827,527	3,839,314
3,762,781	3,811,286	3,828,023	3,839,846
3,764,912	3,812,206	3,828,235	3,840,348
3,767,927	3,813,394	3,828,495	3,840,407
3,768,579	3,813,866	3,828,541	3,840,499
3,770,946	3,815,515	3,828,757	3,840,755
3,771,915	3,815,808	3,828,943	3,840,790
3,775,568	3,816,449	3,829,031	3,841,490
3,775,974	3,816,451	3,829,387	3,841,548
3,777,318	3,816,722	3,830,196	3,841,806
3,780,009	3,816,868	3,830,297	3,841,910
3,780,313	3,817,086	3,830,320	3,842,016
3,782,040	3,817,407	3,830,473	3,842,038
3,782,735	3,817,680	3,830,842	3,842,107
3,783,292	3,817,941	3,830,950	3,843,381
3,783,637	3,818,017	3,831,035	3,843,484
3,784,577	3,818,162	3,831,181	

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are avilable for licensing in accordance with the licensing policy of each agency-sponsor.

Copies of patents are available from the Commissioner of Patents, Washington, D.C. 20231, at $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161, at the prices cited. Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent Office. Claims and other technical data can usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent application 450,521. Compact Fast Analyzer of Rotary Curvette Type. Filed Mar. 12, 1974. PC $4/MF $2.25.

Patent application 459,737. Electrolytic Dissolver. Filed Apr. 10, 1974. PC $4/MF $2.25.

Patent application 464,427. Device for Measuring Biaxial Strain. Filed Apr. 26, 1974. PC $4/MF $2.25.

Patent 3,769,545. Device for Preparing Elemental Carbon Enriched in Carbon-13. Filed Feb. 23, 1972. Patented Mar. 12, 1974. Not available NTIS.

Patent 3,776,284. Article Removal Device for Glovebox. Filed Jan. 20, 1972. Patented Dec. 4, 1973. Not available NTIS.

Patent 3,778,217. Extrusion Die. Filed Oct. 31, 1963. Patented Dec. 11, 1973. Not available NTIS.

Patent 3,782,924. Fine-Grained Zirconium-Base Material. Filed Nov. 26, 1962. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,783,014. Electroless Coating of Molybdenum on Stainless Steels. Filed Jan. 18, 1972. Patented Jan. 1, 1974. Not available NTIS.

Patent 3,785,120. Recovery of Purified Helium or Hydrogen from Gas Mixtures. Filed Oct. 15, 1971. Patented Jan. 15, 1974. Not available NTIS.

Patent 3,786,270. Proportional Counter Radiation Camera. Filed Feb. 1, 1973. Patented Jan. 15, 1974. Not available NTIS.

Patent 3,787,746. Quenching Gas for Detectors of Charged Particles. Filed May 11, 1973. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,787,764. Solid Dielectric Capacitance Gauge for Measuring Fluid Pressure Having Temperature Compensation and Guard Electrode. Filed Dec. 3, 1971. Patented Jan. 22, 1974. Not available NTIS.

Patent 3,789,227. Environmental Dosimeter of the Thermo Luminescent Type. Filed May 18, 1973. Patented Jan. 29, 1974. Not available NTIS.

Patent 3,789,319. Hydrogen Rotation-Vibration Oscillator. Filed May 8, 1972. Patented Jan. 29, 1974. Not available NTIS.

Patent 3,789,321. Electron Beam-Pumped Gas Laser System. Filed Sept. 14, 1972. Patented Jan. 29, 1974. Not available NTIS.

Patent 3,790,492. Method for Production of Uniform Microspheres. Filed Mar. 11, 1974. Patented Feb. 5, 1974. Not available NTIS.

Patent 3,791,945. Method of Production of Alkali Metals and Their Alloys. Filed Feb. 22, 1973. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,791,953. Self-Sealing Electrochemical Oxygen Meter. Filed Oct. 31, 1972. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,792,136. Method for Preparing Hollow Metal Oxide Microsphere. Filed Nov. 2, 1971. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,792,154. Removal of Iodine From Nitric Acid Solutions. Filed Mar. 6, 1972. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,792,155. Method for Increasing the Carbon Yield of Indene-Derived Carbon Precursors. Filed Apr. 27, 1972. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,792,156. Dual Pressure-Dual Temperature Isotope Exchange Process. Filed June 21, 1972. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,792,423. Isometric Imaging System. Filed May 24, 1972. Patented Feb. 12, 1974. Not available NTIS.

Patent 3,793,435. Separation of Hydrogen From Other Gases. Filed May 10, 1972. Patented Feb. 19, 1974. Not available NTIS.

Patent 3,794,116. Situ Coal Bed Gasification. Filed May 30, 1972. Patented Feb. 26, 1974. Not available NTIS.

Patent 3,794,470. Continuous Plutonium Dissolution Apparatus. Filed June 6, 1972. Patented Feb. 26, 1974. Not available NTIS.

Patent 3,794,527. Thermoelectric Converter. Filed Jan. 15, 1970. Patented Feb. 26, 1974. Not available NTIS.

Patent 3,794,532. Spherodization of Grain Boundary Precipitates. Filed Mar. 14, 1972. Patented Feb. 26, 1974. Not available NTIS.

Patent 3,794,814. Continuous Dynamic Error Monitoring Device for Numerically Controlled Machines. Filed Feb. 15, 1973. Patented Feb. 26, 1974. Not available NTIS.

Patent 3,794,927. System for Producing High Energy Positively Charged Particles. Filed Jan. 20, 1970. Patented Feb. 26, 1974. Not available NTIS.

Patent 3,794,929. Compact Laser Amplifier System. Filed Oct. 13, 1972. Patented Feb. 26, 1974. Not available NTIS.

Patent 3,795,874. Apparatus for Pumping a High Pressure Laser System. Filed Nov. 3, 1972. Patented Mar. 5, 1974. Not available NTIS.

Patent 3,797,299. Method of Measuring the Tritium Concentration in a High-Temperature Environment. Filed Apr. 23, 1973. Patented Mar. 19, 1974. Not available NTIS.

Patent 3,798,124. Fuel Subassembly for Nuclear Reactor. Filed May 27, 1969. Patented Mar. 19, 1974. Not available NTIS.

Patent 3,798,569. High Energy Optical Laser. Filed Mar. 15, 1973. Patented Mar. 19, 1974. Not available NTIS.

Patent 3,799,029. Precision Trimmer for an Encapsulated Specimen. Filed Dec. 19, 1972. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,800,023. Loading a Cation Exchange Resin With Uranyl Ions. Filed May 16, 1972. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,800,161. Portable Dynamic Multistation Photometer-Fluorometer. Filed Dec. 19, 1972. Patented Mar. 26, 1974. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE

Chief, Research Agreements and Patent Mgmt. Branch, Hyattsville, Md. 20782

Patent application 431,762. Method for Reducing Heating and Brightness Loss in Pulp Chips With Aqueous Solutions of Sodium N-Methyldithiocarbamate. Filed Jan. 8, 1974. PC $4/MF $2.25.

Patent application 478,284. Combination Sheathing Support-Member Building Product. Filed June 11, 1974. PC $4/MF $2.25.

U.S. DEPARTMENT OF TRANSPORTATION

Patent Counsel, Washington, D.C. 20590

Patent application 494,098. Dynamic Railroad Freight Car Monitoring System. Filed Aug. 2, 1974. PC $4/MF $2.25.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Bethesda, Md. 20014

Patent application 467,506. Apparatus for Evaluating and Testing the Sharpness of Points. Filed May 6, 1974. PC $4/MF $2.25.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters, Washington, D.C. 20546

Patent application 420,424. Fluid Control Apparatus and Method. Filed Nov. 30, 1973. PC $4/MF $1.45.

Patent application 440,916. Electrolytic Cell Design. Filed Feb. 8, 1974. PC $4/MF $1.45.

Patent application 482,105. Ceramic Coating for Silica Insulation. Filed June 24, 1974. PC $4/MF $1.45.

Patent application 489,008. Ether-Linked Aryl Tetracarboxylic Dianhydrides. Filed July 16, 1974. PC $4/MF $1.45.

Patent application 491,418. Integrated Structure Vacuum Tube. Filed July 24, 1974. PC $4/MF $1.45.

Patent application 491,419. Horn Antenna Having V-Shaped Corrugated Slots. Filed July 24, 1974. PC $4/MF $1.45.

Patent application 493,359. An Improved System for Imposing Directional Stability on a Rocket-Propelled Vehicle. Filed July 31, 1974. PC $4/MF $1.45.

Patent application 493,363. Trielectrode Capacitative Pressure Transducer. Filed July 31, 1974. PC $4.25/MF $1.45.

Patent 3,814,645. Method of Repairing Discontinuity in Fiberglass Structures. Patented June 4, 1974. Not available NTIS.

Patent 3,817,622. Measurement of Plasma Temperature and Density Using Radiation Absorption. Patented June 18, 1974. Not available NTIS.

Patent 3,826,964. Digital Servo Controller. Patented July 30, 1974. Not available NTIS.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 9, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-8-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-18-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-14-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-11-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-17-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	4-10-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-9-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-3-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	3-1-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-18-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	6-4-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-21-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	1-4-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	12-14-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	2-27-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	3-22-74

Expiration of patents: The patents within the range of numbers indicated below expire during October 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,811,722 to 2,814,801, inclusive
Plant Patents..... Numbers 1,656 to 1,660, inclusive

REISSUE PATENTS

GRANTED DECEMBER 10, 1974

ERRATA

For CLASS	See PATENT NO.
116-067	28,269
162-343	28,271
172-587	28,272
222-556	28,266
431-190	28,270
117-240	28,267

REISSUES

DECEMBER 10, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,265

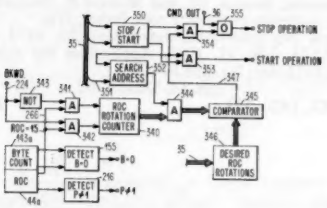
INTRARECORD RESYNCHRONIZATION IN DIGITAL-RECORDING SYSTEMS

John W. Irwin, Loveland, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Original No. 3,641,534, dated Feb. 8, 1972, Ser. No. 888,766, Dec. 29, 1969. Application for reissue Feb. 4, 1974, Ser. No. 439,480

Int. Cl. G11b 5/02

U.S. Cl. 360—50 59 Claims



1. A multitrack-record system for processing digital data signals with recording circuits and read-back circuits having dead-tracking capabilities and for being in operative association with a record media relatively movable with respect to magnetic transducers in either direction along a given path, a byte being a group of signals having one signal respectively associated with a track, the improvement including in combination:

data means for selectively establishing digital data signal-processing operations in said circuits, said operations processing digital signals to and from said record media, said digital signals exhibiting predetermined frequency characteristics,

resync means operatively coupled to said circuits for selectively establishing resync signal processing operations in said circuits for processing resync signals having frequency characteristics within said predetermined frequency characteristics,

control means including cycling means and capable of interrupting said data means operations for interleaving an operation by said resync means,

said resync means being responsive to said interruption to effect processing of said resync signals, said resync signals exhibiting at least one unique signal characteristic not found in said digital signals for indicating position of said resync signals on said media, and

said data means including means for detecting and indicating positional relationships between said tracks by said resync signals and including further means for establishing said predetermined frequency relation between said resync signals and said data means.

28,266

SUPPLY SYSTEM FOR A BURNER OF LIGHT HYDROCARBON-WATER EMULSIONS

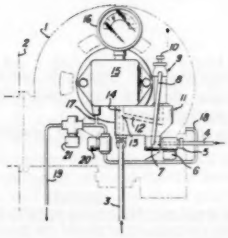
Claude Delatronchette, Cachan, France, by ELF-Union S.A., Paris, France, assignee

Original No. 3,741,712, dated June 26, 1973, Ser. No. 203,756, Dec. 1, 1971. Application for reissue Sept. 5, 1973, Ser. No. 394,515

Claims priority, application France Dec. 7, 1970, 7043860

Int. Cl. F23l 7/00

U.S. Cl. 431—190 3 Claims



1. A supply system for a burner for light hydrocarbons utilizing an emulsion of water and light hydrocarbon comprising a water intake, a light hydrocarbon supply, a mixer of water and light hydrocarbon, a high-pressure pump forcing said emulsion through an injection circuit towards the injector of the burner

a dosing device for the injected water, located in the supply circuit of water to said mixer;

a first normally open electro-valve closed during lighting of the burner and a non-return valve arranged to the input of the water-supply circuit, in front of said dosing device;

a second normally open electro-valve closed during lighting of the burner in the injection circuit;

and a branch circuit connected in the injection circuit between the outlet of said high-pressure pump and said second electro-valve, said branch circuit including a third normally closed electro-valve open during lighting of the burner.

28,267

PROCESS FOR SUPPORTING AND NONUNIFORMLY TREATING ARTICLES

John J. Rackus, Whitehall, John P. Skilbeck, Allentown, and Alfons H. Szkudlapski, Bethlehem, Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Original No. 3,692,638, dated Sept. 19, 1972, Ser. No. 100,176, Dec. 21, 1970. Application for reissue Feb. 8, 1974, Ser. No. 440,933

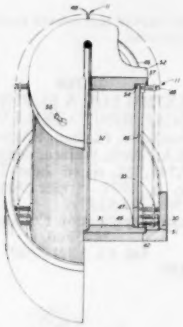
Int. Cl. B01k 3/00; C23b 5/48, 5/70

U.S. Cl. 204—15 14 Claims

1. A method of supporting planar articles in a treating medium, which comprises:

inserting the articles [in] *into* a plurality of slots formed in the outer surface of a member to arrange

the articles in a spaced, radial, *loose*, fan-like manner *external to such surface with portions of the articles being free and extending from the slots* to partially mask the inner side portions of the articles and



to space the *free*, outer side portions of the articles a greater distance from each other than the inner side portions; and

retaining the articles in said manner.

28,268

DEVICE FOR SIGNALING NEED FOR CLEANING OR REPLACING SUCTION CLEANER DUST BAG

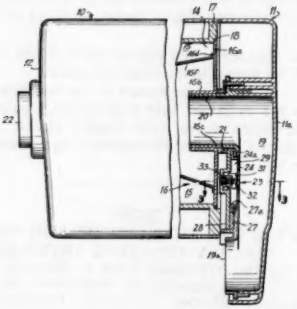
Hubert Marc William Autrand, La Garenne-Colombes, France, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Original No. 3,587,514, dated June 28, 1971, Ser. No. 873,309, Nov. 3, 1969. Application for reissue Nov. 8, 1973, Ser. No. 414,170

Claims priority, application Sweden, Nov. 8, 1968, 15,154/68

Int. Cl. G08b *3/00*

U.S. Cl. 116—67 R **4 Claims**



11. In a suction cleaner of the class described having a casing provided with an inlet and outlet for air adapted to flow therethrough and a dust bag therein for removing dirt from the air, the pressure differential at opposite sides of said dust bag becoming increasingly greater responsive to dirt trapped at the side thereof initially contacted by the air, the combination of

(a) a device for producing an audible signal with the aid of air to indicate the need for cleaning or replacing the dust bag due to dirt trapped therein,

(b) said device comprising structure including a magnet and an armature member which is adapted to be magnetically attracted by said magnet and movable therefrom, said structure defining a passageway having a valve seat at the inlet end thereof,

(c) valve means which is movable to and from said seat with movement of said armature member to and from said magnet, and

(d) means responsive to a force which is dependent upon the pressure differential at opposite sides of said dust bag and exceeds the force magnetically attracting said armature member to said magnet to move said armature member from said magnet, said valve means moving from said seat with movement of said armature member from said magnet for effecting flow of air through said passageway to render said device operable to produce said audible signal.

28,269

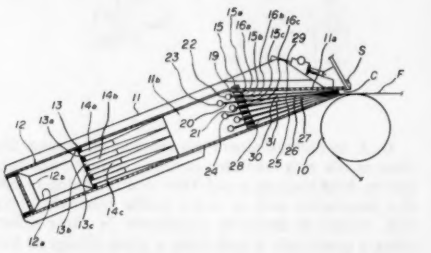
PAPERMAKING MACHINE HEADBOX HAVING TRAILING ELEMENTS IN THE SLICE CHAMBER EXTENDING IN THE STOCK FLOW DIRECTION

Lester M. Hill, Beloit, Wis. and Joseph D. Parker, deceased, late of Roscoe, Ill., by Dorothy C. Parker, executrix, Roscoe, Ill., and Richard E. Hergert, Roscoe, Ill., assignors to Beloit Corp., Beloit, Wis.

Original No. 3,607,625, dated Sept. 21, 1971, Ser. No. 698,633, Jan. 17, 1968. Application for reissue Apr. 30, 1973, Ser. No. 355,544

Int. Cl. D21f *1/02*

U.S. Cl. 162—343 **13 Claims**



1. In a headbox for delivering stock to a forming surface, the headbox having a slice chamber and a slice opening, the improvement comprising a plurality of trailing elements positioned in the slice chamber, each of said elements extending transversely of said headbox *from pondside to pondside*, means anchoring said elements only at their upstream ends at locations spaced generally perpendicular to the stock-flow stream with their downstream portions unattached and constructed to be self-positionable so as to be solely responsive to forces exerted thereon by the stock flowing towards the slice.

28,270

PREPARATION OF MANGANESE BISMUTH

Di Chen and Roger W. Honebrink, Minnetonka, Gary N. Otto, Mayer, and Jack A. Sartell, Minnetonka, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

No Drawing. Original No. 3,539,383, dated Nov. 10, 1970, Ser. No. 690,388, Dec. 14, 1967. Application for reissue May 2, 1973, Ser. No. 356,654

C23c *13/02*; H01f *41/14*

U.S. Cl. 117—240 **8 Claims**

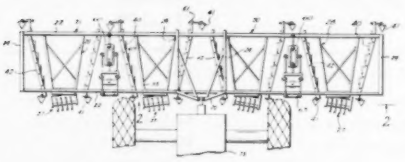
9. A process for producing reproducible, large area thin films of manganese bismuth having substantially uniform magnetic properties over the entire area of the thin film with the crystalline C axis oriented normal to the plane of the thin film and having improved magneto-

optic properties, the process comprising:
depositing bismuth on a substrate;
depositing manganese over the bismuth, the amount of manganese being in excess of the 1 to 1 manganese to bismuth atomic ratio in stoichiometric manganese bismuth; and
heating the deposited manganese bismuth to form the intermetallic manganese bismuth compound.

28,271
CULTIVATOR

Charles L. Lehman and Alvin H. Lehman, Corpus Christi, Tex., assignors to Lehman Equipment Company, Nueces County, Tex.

Original No. 2,994,387, dated Aug. 1, 1961, Ser. No. 113,993, June 12, 1961, which is a continuation-in-part of application Ser. No. 800,304, Mar. 18, 1959, and Ser. No. 54,468, Sept. 7, 1960. Application Ser. No. 800,304 being a continuation-in-part of applications Ser. Nos. 725,640 and 725,641, both filed Apr. 1, 1958, all now abandoned. Application for reissue Sept. 21, 1973, Ser. No. 396,661
Int. Cl. A01b *5/06*
U.S. Cl. 172—587 **26 Claims**

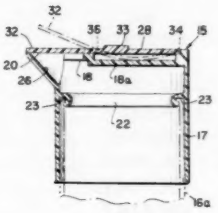


1. A cultivator, comprising a frame adapted to be moved forwardly over the ground, separate gangs of rotary hoes mounted from the frame for swinging about a transverse axis to rotatably engage spaced-apart rows of crops forwardly of such axis and in a laterally extending row during forward movement of the frame, means for adjusting the angular relation of the path of rotation of the hoes of each gang with respect to the forward movement of the frame, and means carried by the frame for turning the ground intermediate adjacent rows of said crops and rearwardly of the engagement therewith of said gangs onto the crops.

28,272
COVER FOR DECANTER OR THE LIKE LIQUID DISPENSING CONTAINER

Melvin Alpern, 9800 McKnight Road, Pittsburgh, Pa. 15237

Original No. 3,739,957, dated June 19, 1973, Ser. No. 189,454, Oct. 14, 1971. Application for reissue Feb. 4, 1974, Ser. No. 439,012
Int. Cl. B67d *3/00*
U.S. Cl. 222—556 **25 Claims**



1. A cover, as for a decanter or like liquid dispensing container having a neck portion, comprising: a cap including an annular skirt *having a lower* portion for attachment over the neck portion of the container, an upper closure wall, and a pouring spout extending outwardly from said skirt and having upwardly presented seat means; the closure wall having an opening therein leading to the spout, the closure wall having a depressed portion having a closed bottom and an open top, a valvular plate of flexible material mounted on said cap and closing the open top of the depressed portion, the plate having a valving end normally closing said spout opening, and an opposite end thereof hingedly supported on the cap over the depressed portion; said valvular plate, at a point intermediate said valving end and said opposite end, having a second point of hinged support on the cap, whereby upon application of manual pressure to the plate intermediate said two points of hinged support, said plate is bowed inwardly of said closure wall into the depressed portion to swing said valving end of the plate away from said spout opening for pouring purposes.

PATENTS

GRANTED DECEMBER 10, 1974

ERRATA

For CLASS	See PATENT NO.
024–134	3,852,943
061–001	3,852,978
074–063	3,852,998
180–079	3,853,069
128–145	3,853,105
269–035	3,853,368
296–062	3,853,369
296–097	3,853,370
296–137	3,853,371
297–045	3,853,372
297–341	3,853,373
350–096	3,853,384
350–164	3,853,386
350–183	3,853,387
073–141	3,853,546
206–045	3,853,741
424–270	3,854,000
346–116	3,854,145

PATENTS

GRANTED DECEMBER 10, 1974

GENERAL AND MECHANICAL

3,852,821

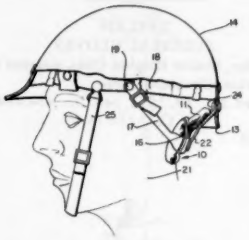
IMPACT ABSORBENT PAD FOR HELMET SHELL

Larry S. Mickel, 309 Austin Loop, Fort Benning, Ga. 31905

Filed June 11, 1973, Ser. No. 368,926

Int. Cl. A63b *71/10*

U.S. Cl. 2—3 R **3 Claims**



1. In combination, a protective helmet comprising a substantially rigid shell and a webbing type suspension system mounted therein for supporting said helmet on the head of a wearer thereof, an impact absorbing pad comprising a body member having the configuration of an inverted T when said impact absorbing pad is in an operative position, said impact absorbing pad being disposed against the head of the wearer of said helmet over the nape area and the base of the skull when in an operative position, an adjustable neckband adapted to overlie the rear of the crossing portion of the inverted T-shaped body member and to support said impact absorbing pad horizontally, said neckband being adjustably attached at each of the two ends thereof to said webbing type suspension at spaced apart points, a suspension strap attached at one end thereof to said neckband at a point approximately midway between said two ends of said neckband and attached at the other end thereof to the inner surface of the rear portion of said rigid shell, said suspension strap being adapted to support said neckband in a vertical direction and to overlie the rear of the base portion of said inverted T-shaped body member and to support the base portion of said inverted T-shaped body member vertically and to hold said base portion against the nape area and the base of the skull of the wearer when said impact absorbing pad and said suspension strap are in operative positions, and means carried by said body member for detachably mounting said impact absorbing pad on said neckband when said impact absorbing pad is in an operative position, whereby said neckband and said suspension strap maintain said impact absorbing pad disposed against the nape area and the base of the skull of the wearer so that said impact absorbing pad prevents impact of the lower rear rim of said rigid shell against the nape or base of the skull of the wearer when the lower rear rim of said rigid shell is forced in the direction of the nape and base of the skull of the wearer.

3,852,822

HARD HAT CROWN SUPPORT BAND ATTACHMENT

Willis T. Watkins, Kansas City, Mo., and Lester Alan Sankpill, Overland Park, Kans., assignors to Parmelee Industries, Inc., Kansas City, Mo.

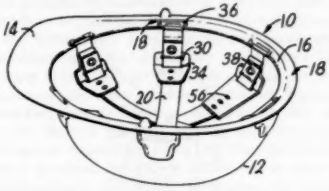
Filed May 14, 1973, Ser. No. 360,015

Int. Cl. A42b *1/00*

U.S. Cl. 2—3 B **21 Claims**

1. In a suspension-type safety helmet having a plurality of elongated webbings attached about the internal periphery of the crown thereof and extending inwardly therefrom to form a suspension system for keeping the helmet spaced from the head of the wearer, attachment means for each of said webbings comprising:

an attachment plate adapted to be secured to the internal periphery of the crown of said helmet, said plate being provided with a slot dimensioned to permit a loop of said webbing to be drawn therethrough; and



an integral keeper element operable to be inserted within the confines of a loop of webbing drawn through said slot, said keeper having a leading portion of reduced dimensions configured for insertion within said slot to locate the keeper, and an enlarged head portion of greater transverse dimension than that of said slot, said head portion being operable to preclude displacement of said keeper through said slot to thereby firmly retain a webbing wrapped therearound in position.

3,852,823

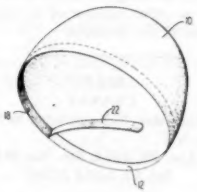
METHOD OF SEALING A BATHING OR SHOWER CAP TO THE HEAD OF THE WEARER

Jane P. Jones, 1316 Fenwick Ln., Apt. 207, Silver Spring, Md. 20910

Continuation of Ser. No. 232,953, March 8, 1972, abandoned, which is a division of Ser. No. 68,893, Sept. 2, 1970, abandoned. This application Nov. 21, 1973, Ser. No. 417,864

Int. Cl. A42b *1/12*

U.S. Cl. 2—68 **5 Claims**



1. A method of sealing a bathing or shower cap against the skin of a user of the cap to prevent entry of water into the cap during use; the steps comprising, employing an adhesive of predetermined length including a base strip and first and second adhesive substances on the opposite sides of said base strip and first and second cover strips overlying the adhesives respectively, removing one of the cover strips to expose the first adhesive, securing the tape to the cap by adhering the exposed adhesive to the inside surface of the cap adjacent the open edge thereof continuously throughout, placing the cap on the head of the user in use position and then removing the other cover strip to expose the second adhesive while the cap is on the user's head in use position, adhering the second adhesive to the skin of the user throughout to seal the interior

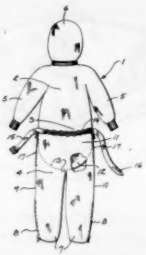
of the cap against water, and then after use of the cap removing the base strip including the second adhesive to clear the inside surface of the cap for applying another adhesive prior to subsequent use of the cap.

3,852,824

DROP SEAT CLOSURE FOR OUTERWEAR GARMENT

Mary Evelyn Grey, Rt. 2, Ladysmith, Wis. 54848

Filed Oct. 26, 1973, Ser. No. 410,175
Int. Cl. A41d *13/02*
U.S. Cl. 2—79 **2 Claims**



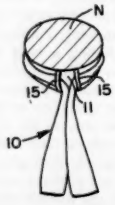
1. In a one-piece cold weather outerwear garment having upper and lower body portions joined in the waist region and the lower body portion having opposed generally vertically extending side seams, a drop seat closure comprising a tail portion on the rear of the upper body portion and extending generally between the opposed side seams and projecting downwardly beneath the waist region to a location approaching the crotch of the garment to thus generally cover the buttock region of the wearer, a seat flap on the lower body portion and extending transversely between the opposed side seams and projecting upwardly into the waist region, said seat flap upon closure overlying said tail portion, an elastic waist band extending substantially over the full width of the seat flap along the free upper edge thereof, complementary belt portions respectively attached to the opposed ends of the elastic waist band of the seat flap, said belt portions being adapted for belt closure at the front of the garment with belt closure stretching the waist band into relatively snug engagement in the waist region and securing the seat flap in closure position, and zipper means to effect closure of the seat flap along the opposed side seams of the garment.

3,852,825

CRAVAT

Leon F. Tirsch, Rochester, N.Y., assignor to Superba Cravats, Inc., Rochester, N.Y.

Filed Apr. 29, 1974, Ser. No. 464,751
Int. Cl. A41d *25/06*
U.S. Cl. 2—146 **9 Claims**



1. The method of manufacturing a cravat, comprising stacking a pair of elongate, fabric strips one on top of the other,

providing between said strips a pair of spaced, parallel, narrow loops of fabric, which extend transversely between the longitudinal side edges of said strips approximately medially of the ends thereof,

producing a tubular blank from said strips by stitching together said longitudinal side edges of said strips along stitch lines, which extend between opposite ends of the strips and transversely across said loops adjacent opposite ends thereof, and

turning said tubular blank inside out to complete the cravat.

3,852,826

SURGICAL GLOVES

Oswald Schindler, Shaker Heights, Ohio, assignor to Intermarket Corporation, Cleveland, Ohio

Filed Jan. 18, 1974, Ser. No. 434,404
Int. Cl. A41d *19/00*
U.S. Cl. 2—168 **3 Claims**

1. Surgical glove of thin latex construction having a predetermined size comprising a finger stall portion, a central body and a cuff and/or wrist portion, said cuff and/or wrist portion being of thickened construction when compared to the finger stall portion, said thickened cuff and/or wrist portion having an inner base portion formed initially with said finger stalls and central body portion, and an overlying circumferential latex band on said inner base portion, said overlying circumferential latex band being of a substantially uniform contrasting color compared to said finger stall portion and central body portion and merges with the underlying base portion, the color of said circumferential latex band being selected to correspond to the predetermined glove size in accordance with a preselected code, the overlying circumferential latex band and said inner base portion forming a substantially unitary structure when viewed in cross-section.

3,852,827

FORM FITTING LOWER BODY GARMENT AND METHOD OF MAKING SAME

Robert B. Colbert, Jr., Humboldt, Tenn., assignor to Wayne-Gossard Corporation, Humboldt, Tenn.

Filed Apr. 29, 1974, Ser. No. 465,429
Int. Cl. A41b *9/04*
U.S. Cl. 2—224 R **20 Claims**

1. A lower body garment, such as panty hose, characterized by increased fullness in a selected area of the panty portion to accommodate lower torsal protuberances of the wearer, said garment comprising

a. a pair of knitted tubular legs,

b. a panty composed of two halves, each panty half being knit integrally with each of said legs and extending upwardly therefrom, said legs and panty halves each being knit with stitch loops forming courses extending circumferentially and wales extending longitudinally of said legs and said panty halves,

c. each leg and panty half including an inside wale and an outside wale positioned 180° apart and defining corresponding front and rear portions therebetween,

d. each panty half having a slit extending downwardly from its upper end with at least a portion of the slit in each panty half extending across a plurality of wales adjacent said inside wale to form fullness fabric areas between the respective slits and inside wales, and

e. means connecting corresponding edges of the slits in said panty halves to form the panty with said connecting

means extending from the waist opening in the panty in the front downwardly through the crotch and upwardly to the waist opening in the rear of said panty, said fullness fabric areas when connected by said connecting means providing increased fullness in that area of the panty to accommodate lower torsal protuberances of the wearer and thereby providing increased fitting quality and comfort.

3,852,828

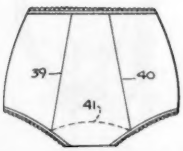
LADIES UNDERGARMENT

Murray Silverstein, 3 Jordan Dr., Great Neck, L.I., N.Y. 11021

Filed May 7, 1973, Ser. No. 357,689

Int. Cl. A41b *9/04*

U.S. Cl. 2—224 A **2 Claims**



1. A lady's panty garment made of blanks of material, comprising a main body blank mainly stretchable in a longitudinal direction, a one piece, outer rear and crotch blank, an inner rear reinforcing blank, and an inner absorbent crotch blank, all of said rear, crotch and reinforcing blanks being mainly stretchable in a vertical direction, wherein the top edge of the absorbent crotch blank is stitched to the bottom edge of the rear reinforcing blank and the other edges of the rear reinforcing blank and the absorbent crotch blank are stitched to the same seams which connect the main body blank and the rear and crotch blank whereby a continuous space for circulating air between said inner and outer blanks extends from the rear waist portion of the garment all the way through the crotch portion to the top of the crotch portion at the front of the garment.

3,852,829

COMPOSITION AND METHOD FOR PRODUCING WRINKLE-FREE PERMANENTLY PRESSED CELLULOSIC TEXTILE MATERIALS

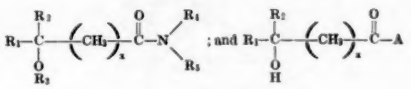
Robert J. Cicione, Cranston, R.I.; Edward G. Najjar, Lincoln; Patricia M. Scanlon, Arlington; John L. Ohlson, Bedford, and Joseph F. Finn, Hyde Park, all of Mass., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. No. 195,844, Nov. 4, 1971,. This application Apr. 20, 1973, Ser. No. 353,161

Int. Cl. A41d

U.S. Cl. 2—243 R **10 Claims**

1. In a process for manufacturing a garment from a fabric prepared from a cellulosic textile material comprising impregnating the fabric with a heat curable aqueous aminoplast creaseproofing agent and drying the impregnated fabric at a temperature below the curing temperature of the aminoplast component of the heat curable aminoplast creaseproofing agent and then cutting said dried fabric to the size, shape and style of the desired garment, sewing the fabric to provide garment seams, finishing the cut and sewn fabric to make a completed garment therefrom, imparting creases into the completed garment, and thereafter heating the impregnated, dried, completed, and creased garment to cure the aminoplast and to insolubilize it in situ so that the completed garment is pressfree and the imparted creases therein are unaffected after repeated washing of the garment, said heat curable aminoplast creaseproofing agent consisting essentially of; (a) water; (b) an aminoplast; and (c) an acidic catalyst, the improvement comprising admixing the heat curable aqueous aminoplast creaseproofing agent and an amount of a member selected from a first group consisting of:



in which;

a. x is 0 or 1;

b. R_1 is hydrogen or an alkyl group having about 1–5 carbon atoms;

c. R_2 is hydrogen or an alkyl group having about 1–5 carbon atoms;

d. R_3 is hydrogen, an alkyl group having about 1–5 carbon atoms, or $-SO_3^-$;

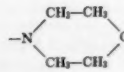
e. R_4 is hydrogen, an alkyl group having about 1–8 carbon atoms, $-CH_2CH_2OH$; or

f. R_5 is hydrogen, an alkyl group having about 1–8 carbon atoms, $-CH_2CH_2OH$;

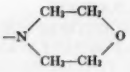
or $-CH_2OH$; and

g. A is a member selected from a second group consisting of:

(I)

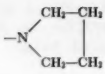


(ii)



and

(iii)



effective for improving hand and increasing crease retention, tensile strength, and dimensional stability of the garment, before impregnating the garment with the heat curable aqueous aminoplast creaseproofing agent.

3,852,830

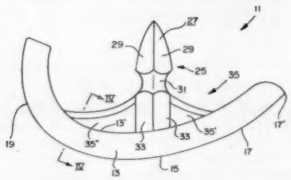
KNEE PROSTHESIS

Leonard Marmor, Los Angeles, Calif., assignor to Richards Manufacturing Company, Memphis, Tenn.

Filed Feb. 15, 1973, Ser. No. 333,127

Int. Cl. A61f *1/24*

U.S. Cl. 3—1 **9 Claims**



8. A knee prosthesis femoral component comprising a curved body portion having a polycentric curved lower face including a posterior section and an anterior section, anchoring means attached to said body portion remote from said lower face for anchoring said body portion to one of the condyles of the knee with which used, said posterior and anterior sections being respectively disposed on imaginary curves with the curve of said posterior section having a predetermined radius substantially smaller than the predetermined radius of the curve of said anterior section, said anchoring means including a single pointed spike attached to said body portion centrally thereof and extending upwardly therefrom, and narrow fin means attached to said body portion and elongated in a direction extending radially of said spike for engaging one of the condyles of the knee with which used for preventing rotation of said body portion relative to the condyle.

3,852,831

ENDOPROSTHETIC ELBOW JOINT

Roger Dee, Norfolk Nor, England, assignor to National Research Development Corporation, London, England

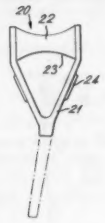
Filed Jan. 29, 1974, Ser. No. 437,663

Claims priority, application Great Britain, Jan. 31, 1973, 4837/73

Int. Cl. A61f *1/24*

U.S. Cl. 3—1 **10 Claims**

1. An endoprosthetic elbow joint device comprising a cooperable pair of ulnar and humeral components; the ulnar component including a first bearing member having a first bearing surface of generally saddle shaped formed as a part of a surface of revolution with concave circumferential form and convex axial form; and the humeral component including a bifurcated member, and a second bearing member bridging the free ends of the arms of said bifurcated member; said second bearing member having a second bearing surface in mutual articulatory generally complementary bearing engagement with said first bearing surface, and shaped as a surface of revolution with its axis of revolution coincident with that of said first bearing surface and extending between said arm free ends, with convex circumferential form of greater angular extent than that of said first bearing surface, and with concave axial form.



3,852,832

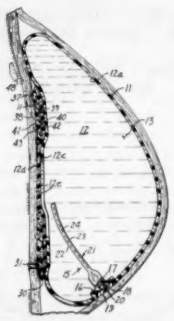
PROSTHESIS WITH FIXATION MEANS

Donald K. McGhan, Santa Barbara, and John E. Williams, Los Angeles, both of Calif., assignors to Heyer-Schulte Corporation, Santa Barbara, Calif., by said McGhan

Filed Oct. 24, 1972, Ser. No. 300,170

Int. Cl. A61f *1/24*; **A41c** *3/10*

U.S. Cl. 3—36 **8 Claims**

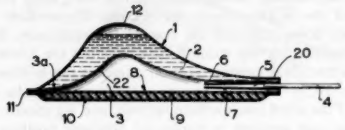


1. in combination: a flexible and pliable prosthesis having an exterior wall, and fixation means comprising a flexible sheetlike body attached to the exterior wall at the edge of the body, the area of the body and the area of that portion of the exterior wall it covers being substantially equal, the body having a first surface facing away from the exterior wall, a second surface facing toward the exterior wall, the first and second surfaces being generally parallel and comprising the opposite sides of the body, and a plurality of third surfaces joining the first and second surfaces, there being a plurality of perforations passing through the body and extending between and interconnecting the first and second surfaces, each perforation having a sidewall, each sidewall forming a respective third surface, and spacer means spacing the second surface from the exterior wall, whereby the said three surfaces are contactible by tissue which will thereby embrace portions of the body and hold the prosthesis in place, said surfaces being impervious to ingrowth of tissue.

3,852,833
BREAST PROSTHESIS

Ernst-Wilhelm Koneke, Wettmar, and Wilhelm Mohl, Grossburgwedel, both of Germany, assignors to Firma Otto Thamert Textil- und Kunststoff GmbH & Co KG, Grossburgwedel, Germany

Filed May 8, 1973, Ser. No. 358,316
Claims priority, application Germany, May 23, 1972, 2224963
Int. Cl. A61f *1/24*; **A41c** *3/10*
U.S. Cl. 3—36 **9 Claims**

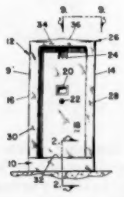


1. A breast prosthesis comprising an inflatable bag divided into superposed chambers, one of said chambers having liquid therein and the other being inflatable, said bag including a flat bottom adapted to be oriented toward the body, a first inner expansible covering extending over the bottom and defining the inflatable chamber between said first covering and said bottom, said inflation chamber being inflatable to expand said first inner covering outwardly from said bottom and a second outer expansible covering overlying the whole of said first covering and secured around its periphery over said first covering and to said bottom, the space between said first and second expansible covering defining a liquid chamber having liquid therein, said first inner covering portion being expandable upon inflation into the liquid of said liquid chamber to at least partly modify the shape of said liquid chamber and said second outer expansible covering.

3,852,834
MODULAR PLUMBING FIXTURE COMBINATION

Earl Lavern Morris, Whittier, Calif., assignor to Acorn Engineering Company, City of Industry, Calif.

Filed May 14, 1973, Ser. No. 360,318
Int. Cl. A47k *3/22*
U.S. Cl. 4—146 **17 Claims**



1. A combination plumbing fixture for connection to a source of fluid and to a fluid drain, comprising:

a. a shower enclosure having a sidewall thereabout, said sidewall having an entrance therethrough for human access into said shower enclosure, and further comprising a roof capping the top of said sidewall and a receptor, secured about the inside of said sidewall adjacent to the bottom of thereof, for receiving fluid, said receptor having a drain aperture therein for the passage of fluids therethrough;

b. a hollow frame member disposed about said shower enclosure entrance, said frame member having at least one perforation through the wall of the frame member facing the inside of said shower enclosure;

c. a showerhead means disposed about said perforation in said frame member;

d. a first anchoring means for securing said showerhead means to said frame member;

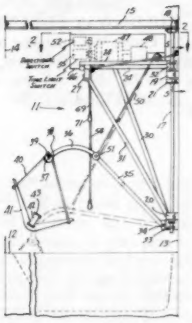
e. a first piping means connected in fluid communication with said showerhead means for delivering fluid thereto, said piping means disposed within said hollow frame member and above the bottom of said sidewall and beneath the shower receptor and thereafterwards passed through said sidewall below said shower receptor for connection to a source of fluid such as water; and

f. fluid drain means connected in fluid communication to said drain aperture in said shower receptor for draining the fluid which accumulates in said shower receptor from said shower receptor.

3,852,835
BATHTUB HOIST AND TRANSFER DEVICE

Willard H. Whitaker, 314 W. Tate St., Corinth, Miss. 38834

Filed June 29, 1973, Ser. No. 375,150
Int. Cl. A47k *3/12*
U.S. Cl. 4—185 L **9 Claims**



1. In combination, a bathtub, a horizontally extending frame structure, means pivotally supporting said frame structure in an elevated position at a fixed height relative to the bathtub for horizontal rotation around a vertical axis located so that said frame structure may be swung from a position projecting laterally from the bathtub to a position overlying the bathtub, and vice versa, a hoist means on the frame structure, a body-supporting member connected to said hoist means, and means for rotating said frame structure in opposite directions comprising respective externally connected control cables extending over opposite side portions of the frame structure and depending from said frame structure adjacent said body supporting member, whereby a person occupying said body-supporting member may be elevated by said hoist means, may be swung over the bathtub, and may be then lowered into the bathtub by said hoist means.

3,852,836
SEWAGE BACKWATER RELIEF VENT

Jene V. Oberholtzer, 10005 Newcombe Dr., Dallas, Tex. 75228

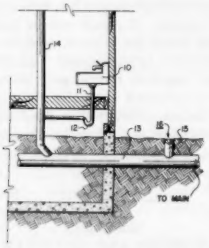
Filed Sept. 18, 1973, Ser. No. 398,408
Int. Cl. E03f *5/08*
U.S. Cl. 4—219 **4 Claims**

1. A relief vent and plug comprising:

a. a first cylindrical body with male threads on the vertical exterior surface thereof and having a centrally located aperture passing vertically therethrough; and

b. a second cylindrical body removeably positioned within said aperture substantially sealing said aperture and retained therein only by gravitational force exerted on said second cylindrical body;

wherein the bottom portion of said aperture is substantially cylindrical and the top portion thereof is expanded to form a recessed groove in the top face of said first cylindrical body



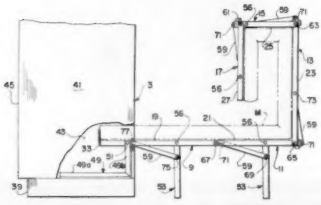
concentric with said cylindrical portion of said aperture, and the external surface of said second cylindrical body is conformed to mate with the surfaces of said aperture.

3,852,837

FOLD-AWAY BED UNIT

Paul W. Eakins, St. Louis, Mo., assignor to The Foster Brothers Manufacturing Company, St. Louis, Mo.

Filed Apr. 28, 1972, Ser. No. 248,533
Int. Cl. A47c *19/06*
U.S. Cl. 5—155 **3 Claims**



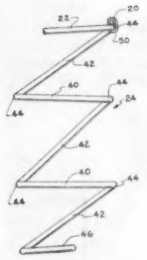
1. A fold-away bed unit comprising an enclosure having an open side, and a folding bed fixture adapted to be folded up with a mattress thereon housed in said enclosure and unfolded and extended outwardly therefrom through the said open side of the enclosure for use as a bed, said fixture comprising a plurality of sections pivotally connected together end-to-end, with one section constituting a head section at one end of the fixture, another section constituting a foot section at the other end of the fixture, and first, second and third intermediate sections between the head section and the foot section, with the length of the second intermediate section corresponding generally to the length of the head section, the length of the third intermediate section being less than the length of the first intermediate section and the length of the foot section being less than the length of the second intermediate section, said sections being adapted to occupy an unfolded extended position wherein they are generally coplanar and extend out from said enclosure, and adapted to be folded by successive folding up of the foot and intermediate sections to a fold-away position forming in conjunction with the head section a folded structure of rectangular outline in cross-section in a vertical plane perpendicular to the pivotal axes of the sections, with the first intermediate section extending up from the outer end of the head section, the second intermediate section extending rearward from the upper end of the first, the third intermediate section extending down from the inner end of the second, and the foot section extending out from the lower end of the third intermediate section, and with the mattress being thereby folded along four fold lines to have a portion between the head and foot sections, a portion extending up on the inside of the first intermediate section, a portion extending rearward on the inside of the second intermediate section, a portion extending down along the third intermediate section, and a portion extending forward on the foot section, means at the sides of the enclosure pivotally mounting the head section for swinging movement on a horizontal axis extending transversely with respect to the fixture and enclosure at a suitable bed elevation above floor level, whereby said folded structure may be swung as a unit about said horizontal axis into the enclosure to a position wherein the head section extends generally vertically adjacent the front of the enclosure, the first intermediate section extends rearward from the upper end of the head section, the second intermediate section extends down adjacent the rear of the enclosure, the third intermediate section extends forward from the lower end of the second intermediate section adjacent the bottom of the enclosure, and the foot section extends up from the forward end of the third intermediate section, and leg means for supporting said sections in horizontal coplanar position at said bed elevation above floor level when the sections are extended, said bed unit having means interconnecting the foot section to the third intermediate section, the third intermediate section to the second intermediate section, the second intermediate section to the first intermediate section, and the first intermediate section to the head section for locking each of these sections in its fold-away position in response to its being folded up to its fold-away position.

3,852,838

BOX SPRING ASSEMBLY AND IMPROVED SPRINGS THEREFOR

Walter V. Slominski, Ann Arbor, Mich., and Jack C. Mandusky, Lexington, Ky., assignors to Hoover Bell and Bearing Company, Saline, Mich.

Filed May 23, 1973, Ser. No. 362,887
Int. Cl. A47c *23/02*
U.S. Cl. 5—247 **12 Claims**

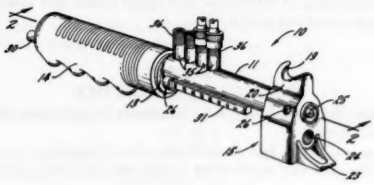


1. In a box spring assembly which includes a supporting frame, a plurality of spring members mounted on said frame and connected together to form a spring deck disposed above the frame and yieldably movable toward the frame, at least some of said springs comprising substantially horizontal body portions and depending end portions, each of said end portions comprising a plurality of angularly arranged connecting bars and substantially horizontal torsion bars extending between and connecting adjacent connecting bars, alternate ones of said connecting bars being substantially horizontal in the unloaded condition of said spring and other ones of said connecting bars extending obliquely upward from said alternate ones so that when said springs are subjected to downwardly directed loads said alternate connecting bars are bent downwardly and said other connecting bars are also bent downwardly so that they become inclined in the same direction as said alternate bars to thereby achieve resistance to load by both twisting of said torsion bars and bending of said connecting bars.

3,852,839
TIRE TOOL

Jerry A. Blessing, DeKalb, Ill., assignor to BLT Industries, Gilberts, Ill.

Continuation-in-part of Ser. No. 279,193, Aug. 9, 1972, abandoned. This application Nov. 15, 1973, Ser. No. 416,166
Int. Cl. B25f 1/00; B23p 19/04
U.S. Cl. 7—8 **11 Claims**

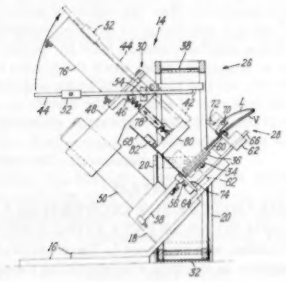


1. A tire tool comprising an elongated shank, a handle on one end of said shank, a metal head on the opposite end of said shank, said head having an inner end facing said handle and an oppositely facing outer end and also having upper and lower ends, a wheel weight hook formed integrally with said head and opening upwardly and outwardly from the upper end thereof, a substantially flat surface formed on the lower end of said head and defining a hammer face, a hubcap pry rigid with and projecting outwardly from the outer end of said head adjacent said hammer face, a threaded valve stem hole formed in said head and opening out of the outer end thereof above said pry, and a valve core rotating element coaxial with said shank and located between said hook and said pry, said valve core rotating element being connected to turn with said shank and being located adjacent the outer end of said head.

3,852,840
MACHINE FOR ADHESIVELY SECURING SHEET MATERIAL

Albert Eugene Newton, Beverly, Mass., assignor to USM Corporation, Boston, Mass.

Filed Feb. 7, 1974, Ser. No. 440,288
Int. Cl. A43d 7/00; B05c 11/00
U.S. Cl. 12—61 A **6 Claims**

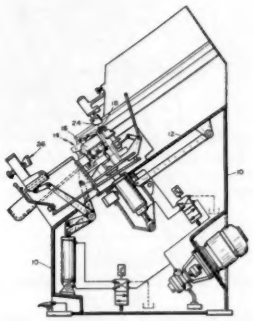


1. A machine for assembling and securing two plies of flexible sheet material to be stiffened comprising, a work supporting bed for supporting one of the two plies with an adhesive tacky coating thereon exposed when the second ply is at least partly disassociated therefrom, dispenser mechanism for depositing a layer of reinforcing resin granules on the tacky adhesive coating of the one ply except for a margin of said coating, combining mechanism for superimposing the second ply in outspread intimate contact with the first ply, its coated margin, and said layer of granules, and pressure means thereupon operable to compress the thus combined plies at least in their tacky coating area in secured relation.

3,852,841
SHOE SUPPORT FOR WELT LASTING MACHINE

Herbert Schindler, and Tilo Loffler, both of Pirmasens, Germany, assignors to American Shoe Machinery Corporation, Wakefield, Mass.

Filed Aug. 9, 1973, Ser. No. 387,104
Int. Cl. A43d 21/00, 3/00
U.S. Cl. 12—142 R **19 Claims**



1. In a machine for pulling over and lasting a welt shoe assembly including a last, an insole at the bottom of the last and an upper draped about the last, the insole having a rib secured to the bottom thereto in generally horseshoe shaped configuration, said machine including a plurality of shoe operating instrumentalities disposed therein about a shoe supporting station, an improved shoe and rib support comprising:

a member supported in said machine at said shoe supporting station to support said shoe assembly in relation to said shoe operating instrumentalities, said member having a peripheral wall of generally horseshoe shape and an upper, insole-supporting surface, said member being of articulated construction in which at least the portions of said peripheral wall disposed heelwardly of said bight may be expanded or contracted in a generally lateral direction thereby to expand or contract the width of the horseshoe shape defined thereby;

means for moving said articulated portions of said member between a contracted idle position in which the width defined by the horseshoe shaped thereof is less than the width of the horseshoe shaped defined by said rib and a working, expanded position in which the width of the horseshoe shape defined by said peripheral wall is substantially equal to the width of the horseshoe shape defined by said rib whereby when said shoe assembly is placed on said support with the insole resting on the upper surface of said support and the rib extending down therefrom and surrounding the peripheral wall of said support, the articulated portions of said support may be expanded laterally and outwardly so that the sidewall portions thereof may engage and provide a backing support for said insole rib;

means mounting said horseshoe shaped member for bodily movement from a remote position to said working position;

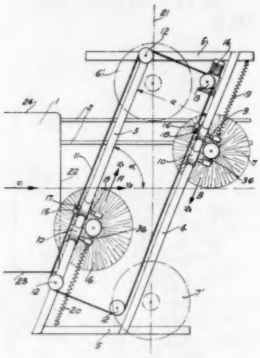
means maintaining said member in said contracted configuration when said member is in said remote position; and means for effecting said expansion of said articulated portions of said member in response to said bodily movement of said member from said remote to said working position.

3,852,842

STATIONARY WASHING DEVICE FOR MOTOR VEHICLES PASSING THERETHROUGH

Gebhard Weigele, Am Schonblick 1a, Tafertingen, and Johann Sulzberger, Radegundis 11, Augsburg, both of Germany

Filed June 11, 1973, Ser. No. 368,666
Claims priority, application Germany, June 12, 1972, 2228567
Int. Cl. B60s 3/06
U.S. Cl. 15—21 D 6 Claims



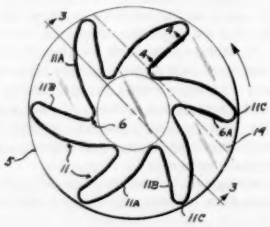
1. A stationary washing device for vehicles passing therethrough having first and second vertical washing brushes which are each pendently supported on carriages which are in turn movably supported on guide rail means arranged inclined with respect to the direction of travel, said brushes and guide rail means being so arranged that the first brush washes first the front and then one vehicle side and the second brush washes first the other vehicle side and then the rear, comprising the improvement wherein said guide rail means comprises two guide rails parallel with respect to one another and on each rail one of said brushes is supported so that in the beginning position said first and second brushes are located at opposite ends of the rails and wherein oppositely directed movement of said first and second brushes is effected by connecting their respective carriages by a continuous, drivable traction member.

3,852,843

ROTARY DISC CUTTING DEVICE

Anthony B. Metz, 129 Chester Ave., Chelsea, Mass. 02150

Filed May 30, 1973, Ser. No. 365,222
Int. Cl. B44d 3/16
U.S. Cl. 15—93 15 Claims



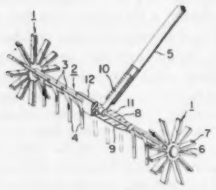
1. A device for use in removing paint or other surface layers from wood, metal, bricks, and the like and to be rotated by a power driver, said device comprising a resiliently flexible disc of a moldable material, a length of a blade of the band saw type embedded and anchored in the disc in such a manner that its teeth are exposed on a face thereof, and axial means exposed on the other face for attaching the disc to the driver, said embedded blade length extending completely around said axial means and including a plurality of outwardly disposed loop portions providing leading and trailing courses and closed outer ends, at least the leading course of each loop portion being outwardly inclined in a trailing direction with respect to the direction the device is to be rotated, said loop portions being of substantial and radial extent and uniformly spaced circumferentially.

3,852,844

CARPET FLUFFING DEVICE

Hiroshi Hukuba, No. 914-1, Nazukari, Nagareyama Chiba-ken, Japan

Filed Jan. 8, 1973, Ser. No. 321,636
Claims priority, application Japan, Jan. 11, 1972, 47-5739
Int. Cl. A47l 13/00
U.S. Cl. 15—142 7 Claims



1. A carpet fluffing device, comprising an elongated substantially horizontal extending axle, and elongated handle fixedly attached to the axle substantial at the center thereof, a pair of wheels rotatably mounted on the axle adjacent the opposite ends thereof, each wheel comprising a hub rotatably mounted on the axle and a plurality of spokes extending outwardly from the periphery of the hub, the spokes being thin in thickness but rather broad in width, a plurality of first pins fixed to said axle and aligned in a first row which is substantially parallel with the longitudinal direction of the axle, a plurality of second pins fixed to the axle and aligned in a second row which is substantially parallel with the longitudinal direction of the axle, the first and second pins each projecting radially outwardly from the axle, the first and second pins each having a length less than the radius of said wheels with the first and second pins being of different lengths, the first row of pins being angularly spaced from the handle to permit the first pins to engage a carpet when the handle is in a first position, and the second row of pins being angularly spaced from both the first row of pins and the handle to enable the second row of pins to engage the carpet when the handle is moved into a second position.

3,852,845

WIPER ARM ADAPTER FOR CONVERTING A SINGLE WIPER ARM TO AN ARTICULATING WIPER ARM

William J. Quinlan, and Laurence L. Huver, both of Hastings, Mich., assignors to Hastings Manufacturing Company, Hastings, Mich.

Filed June 13, 1973, Ser. No. 369,485
Int. Cl. B60s 1/40, 1/32
U.S. Cl. 15—250.23 13 Claims

1. A windshield wiper arm adapter for converting a single lever oscillating wiper arm having a driven end and a free end to a compound articulating wiper arm assembly comprising a pivot block, a windshield wiper blade mounting pin anchored in said pivot block, an elongated secondary wiper arm having one end pivotally connected to said pivot block and a second end provided with bearing means for pivotal mounting with respect to a fixed pivot, a detachable connector means for

interlocking engagement with the free end of said single lever wiper arm and for manually actuated disengagement there-

from, and means for pivotally connecting said detachable connector means to said pivot block.

3,852,846

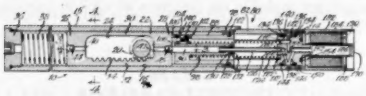
DOOR HOLD OPEN ATTACHMENT FOR A DOOR CHECK

Loren E. Slaybaugh, Arlington Heights, Ill., assignor to Republic Industries, Inc., Chicago, Ill.

Filed July 28, 1972, Ser. No. 276,122

Int. Cl. E05f *15/20*

U.S. Cl. 16—48.5 **9 Claims**



1. In a door check of the type which includes means defining a cylinder, a member slidable within said cylinder, resilient means biasing said member toward one end of said cylinder, means for connecting said door check to a door and frame combination to move said member relative to said cylinder against said biasing means upon opening said door, hydraulic fluid in said cylinder and means for permitting fluid flow counter to the movement of said member to restrain the movement of said door; a door hold-open mechanism comprising means providing an extension of said cylinder on that end thereof toward which said member is biased, a piston resiliently biased within said extension to follow said member and having a one way flow passage therein to admit fluid therethrough upon following movement against said resilient means, means closing said extension, said closing means including a passage having a valve seat therein for delivering fluid from the downstream side of said one way flow passage to the upstream side thereof, a valve for closing against said valve seat, and electrically actuated means for operating said valve.

3,852,847

APPARATUS FOR MANUFACTURING TAMPONS

Herbert Etz, Wuppertal-Langerfeld, Germany, assignor to Dr. Carl Hahn KG, Dusseldorf, Germany

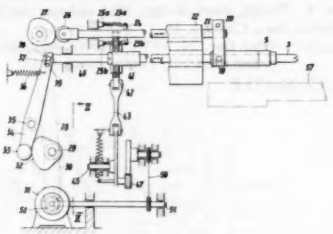
Division of Ser. No. 870,783, Sept. 19, 1969, which is a division of Ser. No. 502,780, Oct. 21, 1965, Pat. No. 3,477,102. This application Apr. 7, 1972, Ser. No. 242,129

Claims priority, application Netherlands, Oct. 22, 1964, 6412326

Int. Cl. A61l *15/00*

U.S. Cl. 19—144.5 **9 Claims**

1. Apparatus for the production of a tampon by rolling up a wadding pad upon a rotary mandrel comprising means for slinging a draw thread with clearance around a wadding pad positioned on a rotary mandrel and means for forming a knotted loop having a free end from said draw thread before the wadding pad is rolled up on the mandrel, means for rotating said mandrel, a sleeve mounted for coaxial movement about the mandrel but non-rotatable with respect to the mandrel, means for axially reciprocating said sleeve, a first thread guide means carried by said mandrel and a second thread guide means carried by the coaxial sleeve, said first guide means for guiding the thread as it is slung around said mandrel and said wadding, said second thread guiding means carried by the sleeve having means to intercept and direct the free end of the draw thread internally of said sleeve while the mandrel is



rotated and while the sleeve is displaced axially by the reciprocating means into one end of the pad being rolled up, whereby the draw thread is wound into a flat spiral spool seated in recess annular recessed formed by said displacement of said sleeve into the end of the rolled up pad.

3,852,848

METHOD OF, AND APPARATUS FOR STANDARDIZING SLIVERS

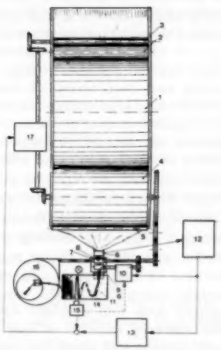
Peter Feller, Uster, Switzerland, assignor to Zellweger, Inc., Uster, Switzerland

Filed Sept. 7, 1972, Ser. No. 286,865

Claims priority, application Switzerland, Sept. 7, 1971, 13143/71

Int. Cl. D01h *5/38*

U.S. Cl. 19—240 **10 Claims**



1. A method for standardizing the cross section or weight per unit length of a sliver produced by a textile machine, comprising the steps of measuring the supply of material at the outlet of the machine, drafting the material subsequent to the measuring thereof, correcting long-term fluctuations in the supply of material at the inlet of the machine in response to the measured supply of material at the outlet of the machine, correcting short-term fluctuations in the material at the outlet of the machine in response to the measured supply of material by altering the draft thereof, supplying the sliver at the outlet of the machine to a coiling mechanism, and, in order to keep the speed of the coiling mechanism at a constant level, adjusting the difference between the variable rate of the short-term correction operation and the rate of travel of the sliver by supplying said sliver to a sliver reservoir prior to delivery to said coiling mechanism, monitoring the filling level of the sliver reservoir and, as a result of such monitoring, controlling

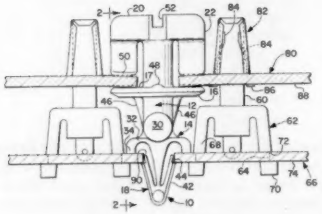
at least one of said correcting operations in such a way that the average filling level of the sliver reservoir remains constant.

3,852,849

PANEL MOUNTING FASTENER

John A. Pestka, Park Ridge, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed Dec. 26, 1973, Ser. No. 428,509
Int. Cl. F16b *19/00;* **A44b** *21/00*
U.S. Cl. 24—73 P **4 Claims**



1. A one-piece plastic rotatable fastener for mounting at least one panel in predetermined spaced relation to a support, said support carrying a male contact having a predetermined axial length in relation to one reference surface of said support, said panel including a female contact having a predetermined position relative to said panel whereby when said panel is oriented and maintained at a predetermined distance from said support said female contact will telescopically engage said male contact at a preselected optimum position, said fastener including a central axially extending body portion, flange means extending radially outwardly from predetermined spaced positions on said body portion, resilient stud means extending axially from one end of said body portion and having positive shoulder means spaced from and in opposing relation to one of said flange means and adapted to be snapped into said apertured support means with said shoulder means contacting said predetermined reference surface of said support means, said stud means adapted to be positively axially retained against inadvertent removal but capable of rotation within said aperture of the support means, said body portion extending axially beyond said other flange means at the end opposite said stud and carrying at least one substantially rigid wing element extending radially outwardly in overlying spaced relation to said other flange means, said wing element including a depending resilient arm the free end of which is spaced from said other flange means a distance less than the thickness of said panel, said other flange means having the surface facing said flexible arm acting as a reference plane spaced from said shoulder means said predetermined distance whereby rotation of said fastener results in said flexible arm forcing said panel into intimate engagement with said other flange means reference surface thereby insuring accurate positionment of said male contact within said female contact to obtain the predetermined optimum contact between said male and female contacts.

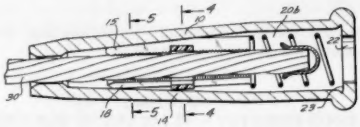
3,852,850

CABLE GRIPPING UNIT

Ilmar J. Filhaber, Poughkeepsie, N.Y., assignor to Fargo Mfg. Company Inc., Poughkeepsie, N.Y.

Continuation-in-part of Ser. No. 150,133, June 4, 1971, abandoned. This application Feb. 26, 1973, Ser. No. 335,440
Int. Cl. F16g *11/00*
U.S. Cl. 24—136 R **5 Claims**

1. In a unit for gripping a helical stranded cable of the type including a shell having a conical shell bore terminating at its outer end in a cable accommodating opening and presenting a tapered shell bore circular in cross section, a gripping member within said shell bore and movable longitudinally of said shell, and a helical spring thrusting against said member and said shell, that improvement consisting of said gripping member comprising: an elastic retaining member within said shell bore, a plurality of jaw segments, said retaining member being circular and concentric with said shell bore and provided with a plurality of jaw segment retaining slots within each of which one of said jaw segments is respectively retained whereby said



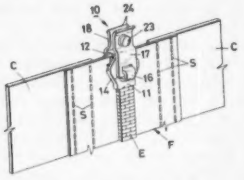
jaw segments are supported by said retaining member within said shell bore in circular arrangement, a cylindrical jaw bore defined by said jaw segments, said retaining member yieldingly urging said jaw segments to ride on the surface of said shell bore, said helical spring yieldingly urging said gripping member toward the reduced end of said shell bore constricting said jaw segments and a cable gripping portion of each of said jaw segments angled in the direction which is in opposite hand to the helix of said cable disposed therein.

3,852,851

TWIN PULL TAB SLIDER

Yoshitaka Higuchi, Kamiichi-Machi, and Susumu Ishii, Kurobe, both of Japan, assignors to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 11, 1974, Ser. No. 441,336
Claims priority, application Japan, Feb. 13, 1973, 48-19424
Int. Cl. A44b *19/30*
U.S. Cl. 24—205.11 L **3 Claims**



1. A slider for heavy duty slide fasteners which comprises an upper wing and a lower wing constituting a slider body and connected together at one end, a pair of pull tabs pivotally carried at their one ends on said upper and lower wing respectively and arranged to rotate between a first position in which the slider is unlocked and a second position in which the slider is locked relative to the fastener, a locking means extending at least from one of said pair of pull tabs and adapted to lock the slider against movement relative to the fastener, and engaging means provided at the other ends of said pull tabs for joining the latter together when the slider is held in said second position.

3,852,852

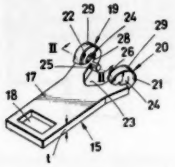
PULL TAB FOR CAM LOCK SLIDERS

Hirokazu Watanabe, Kurobe, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1973, Ser. No. 426,666
Claims priority, application Japan, Dec. 14, 1972, 47-125428
Int. Cl. A44b *19/30*
U.S. Cl. 24—205.14 A **1 Claim**

1. A pull tab for slide fastener sliders which comprises a tab body having a slot adjacent one end, bifurcated tongues integral with said body and extending on opposite sides of said

slot, an inwardly directed trunnion extending from each of said bifurcated tongues into said slot and adapted to connect the pull tab pivotally to a slider, and a reinforcing core integral with and projecting perpendicularly from a portion of said tongue, said tongue, including said portion, being bent over



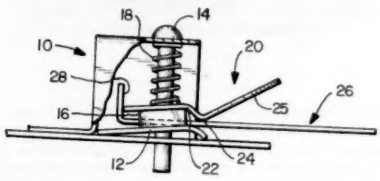
backward around said core substantially into the form of a roll serving as a locking cam, said tongue having a thickness as measured diametrically of the roll substantially equal to that of said tab body, and said reinforcing core being held in intimate contact with the inner peripheral surfaces of said tongue.

3,852,853

DEVICE FOR LATCHING OR LOCKING TWO OBJECTS TOGETHER

Carson Thomas, 1011 S. 22nd St., Arlington, Va. 22202

Filed Dec. 15, 1972, Ser. No. 315,579
Int. Cl. A44b *19/00*
U.S. Cl. 24—230 A **11 Claims**



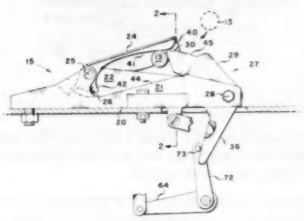
1. A device for latching two objects together comprising: a housing having at least one open end; at least one pin means mounted in said housing at a predetermined distance from said open end; keeper means in said housing having a front edge adjacent said open end and a back edge disposed on the opposite side of said pin means from said open end; tongue means having a protrusion thereon, said tongue means being slidable into said housing under said keeper means from said front edge toward said back edge for locking engagement of said protrusion with said back edge; a fulcrum means in said housing between said front and back edges on the side of said pin means adjacent said open end; each of said front and back edges of said keeper means being pivotally mounted for movement about said fulcrum means in two opposite directions both for the movement of said tongue means into said housing into locking engagement with said keeper and for the movement of said tongue means out of said housing and out of said locking engagement with said keeper means; said keeper means being mounted on said pin means for rectilinear movement thereon as said keeper means pivots about said fulcrum means; and means for biasing said keeper means toward a locking position to hold said protrusion in locking engagement with said back edge.

3,852,854

GIRT BAR LATCHING SYSTEM

Donald L. Sigrud, Granada Hills; Carleton M. Fields, Canoga Park; Ernest R. Rickel, Northridge, all of Calif., and Joseph A. Cline, Rimon-Kiryat Ono, Israel, assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Apr. 5, 1973, Ser. No. 348,234
Int. Cl. A44b *11/25, 13/00*
U.S. Cl. 24—230 AT **11 Claims**



1. A girt bar latching system for a deployable escape chute assembly utilized under evacuation procedures associated with a closed structure such as an aircraft cabin or the like, comprising:

a girt bar having opposing end portions and having a length adapted to be operatively connected to an escape chute collapsed within a container mounted on the interior side of an exit door for the closed structure or the like, the girt bar generally disposed at the base of the container;

at least a pair of latching units adapted to be secured to the floor of the closed structure at a station at which a corresponding one of the end portions of the girt bar can engage and be latched to its corresponding one of said units;

each of said units defining a cavity and a notch into each of which a corresponding one of said end portions is introduced upon closing of the door;

a member covering the cavity and being pivotally connected to each of said units;

a latch member rotatably mounted on each of said units and facing the cavity and towards said covering member, said latch member being biased upwardly to engage and maintain said covering member in a raised position; and

means for actuating said latch member against its bias to depress it below said notch for each of said latching units whereby the end portions of said girt bar can be released from said latching units.

3,852,855

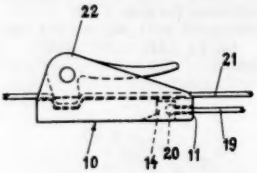
FASTENING ELEMENT FOR ONE END OF A BAND

Sigurd Walter Bengtsson, Bruksgatan 17, Gothenburg, Sweden

Filed Nov. 24, 1972, Ser. No. 309,425
Claims priority, application Sweden, Nov. 29, 1971, 15233/71
Int. Cl. A44c *5/18;* **F16g** *11/00*
U.S. Cl. 24—265 EE **1 Claim**

1. A fastening element for receiving the beaded end of a knot-free band of rectangular cross-section, comprising: a onepiece rigid body having a channel of a rectangular cross-sectional size complemental to and receptive of the band, said channel extending from an end surface thereof into said body and terminating therein, there being an enlarged recess in said body at the inner end of said channel, said recess opening otherwise only at an adjacent side surface of said body and being of a size receptive of the beaded end of the band, said recess being defined in part by an internal transverse wall in the body facing the inner end of said channel and disposed in proximity thereto, whereby the structure of the fastening element restrains the beaded end of the band against signifi-

cant movement in either longitudinal direction, and said body having a sloping lead-in surface for the band, said lead-in surface extending from said adjacent side surface and intersecting said transverse wall along a line such that said lead-in surface cannot be engaged by the bead for disconnection with deflection of the band with a tool.



3,852,856

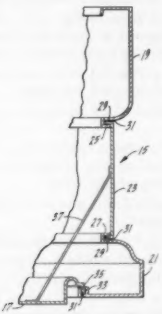
CASKET STRUCTURE AND METHOD OF MAKING IT

Francis R. Christian, River Forest, Ill., assignor to The Merit Company, Chicago, Ill.

Continuation of Ser. No. 248,659, April 28, 1972, abandoned. This application Jan. 25, 1974, Ser. No. 436,433

Int. Cl. A61g *17/00*

U.S. Cl. 27—6 **3 Claims**



1. A casket body having side walls, end walls and a bottom wall, each of said side and end walls being formed of three horizontally extending sections which are fastened together, one above the other, the top and bottom sections of the end and side walls being formed as extrusions of an easily extrudable material selected from the group consisting of aluminum and bronze, so that ornamental designs may be formed therein, and the center section being formed of ferrous sheet material, which is stronger and harder than the extrusions of the top and bottom sections.

3,852,857

TEXTILE FLUID CRIMPING APPARATUS

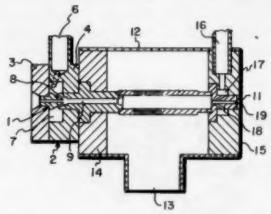
Frederick Allen Ethridge; Michael Paul Taylor, and Scott Winfield Thompson, all of Charlotte, N.C., assignors to Fiber Industries, Inc., Charlotte, N.C.

Filed May 4, 1972, Ser. No. 250,204

Int. Cl. D02g *1/20, 1/16, 1/12*

U.S. Cl. 28—1.3 **8 Claims**

1. Apparatus for fluid crimping yarn comprising a yarn forwarding jet having a hot fluid supply connected thereto, said yarn forwarding jet having an elongated bore, the length of the bore being sufficient to effect a heat transfer between yarn processing fluid and the yarn, a yarn braking jet having a cold fluid supply connected thereto and a compaction chamber disposed intermediate and in contact with said forwarding jet and said braking jet, said compaction chamber having a means for exhausting said hot gas and said cold gas, whereby a yarn plug which has formed in said chamber is subjected to a cooling fluid flow from said braking jet to provide crimp-producing plug compression and to set said yarn in its crimped configuration without stick-slip motion of the yarn.



3,852,858

INDEX PIN FOR BRACING AND ORIENTING THE TOOL TURRET OF MACHINE TOOLS

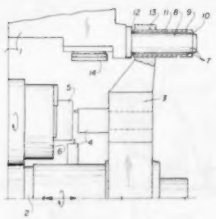
Eberhard Van Der Horst, Erkelenz, Germany, assignor to A. Monforts, Monchengladbach, Germany

Filed Nov. 12, 1973, Ser. No. 415,019

Claims priority, application Germany, Nov. 14, 1972, 2255647

Int. Cl. B23b *3/16*

U.S. Cl. 29—48.5 A **4 Claims**



1. In a machine tool having a machine frame and a tool turret rotatably mounted thereon, an index pin for bracing and orienting the tool turret, said index pin being extensible between an arm of the tool turret and a part of the machine frame for holding the tool turret against rotary motion relative to the machine frame, said index pin comprising a core member, and a cylindrical member disposed around and coaxial to said core member at a spaced distance therefrom, said cylindrical member being firmly secured to a free end of said core member.

3,852,859

CUTTING TOOL

Edwin A. Carpenter, Milwaukee, Wis., assignor to Allied Tool Products, Inc., Milwaukee, Wis.

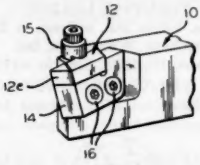
Filed Mar. 22, 1972, Ser. No. 237,157

Int. Cl. B26d *1/00*

U.S. Cl. 29—96 **14 Claims**

1. A thread cutting tool including a thread cutting insert and insert holding means, said insert having a cutting tip formed at one end for cutting a thread in a work piece, a component of the force on said insert resulting from the engagement between said insert and said work piece being directed in a first direction, said insert holding means having a first support surface, said insert having a first face on the side thereof away from the direction of said force component and engaging said

first support surface, said insert holding means having a second support surface formed at an acute angle relative to said first support surface, said second support surface engaging



said insert at the end thereof opposite said tip and acting on said opposite end in a direction generally parallel to the direction of said force component.

3,852,860

BENDING COMPENSATED ROLL FOR A CALENDER

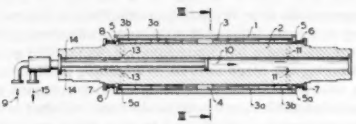
Jochen Tewes, Seppenrade, Germany, assignor to Hermann Berstorff Maschinenbau GmbH, Hannover-Kloefeld, Germany

Filed Oct. 23, 1973, Ser. No. 408,302

Claims priority, application Germany, Oct. 21, 1972, 2251763

Int. Cl. B21b *13/02*

U.S. Cl. 29—110 **2 Claims**



1. A roll for rolling out plastics material to form a web of sheeting in a calender, said roll comprising a core, an outer shell surrounding said core and spaced relative thereto, and resilient means interposed between said core and said shell at regular intervals around said core, said resilient means comprising pieces of resilient metal tubes longitudinally arranged and abutting in rows at regular intervals around said core, the internal diameter of the tubes in each row decreasing from the ends of said rolls toward the center of said roll, said metal tubes having a constant external diameter so as to provide linear support of said shell on said core, said rows of tubes thereby providing a spring force which increases from the ends toward the middle of said row commensurately with the bending characteristics of said core.

3,852,861

SURFACES WITH FLUOROCARBON PROCESS FOR MULTIPLE COATING RESINS

John R. Baker, Webster, and Edward G. Williams, Macedon, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 187,208, Oct. 6, 1971, Pat. No. 3,776,760.

This application Apr. 26, 1973, Ser. No. 354,719

Int. Cl. B21b *31/08*

U.S. Cl. 29—132 **2 Claims**

1. A fuser roll for use in a xerographic reproducing apparatus for fixing a resin-based powder image onto a support surface to which the powder image is loosely adhering, said fuser roll having a single-fused homogeneous coating of fluorocarbon polymer coating of at least 1.5 mils.

3,852,862

ROLL AND METHOD OF MANUFACTURE

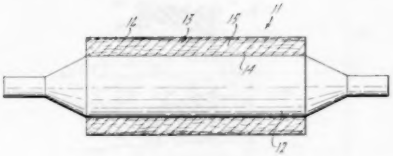
Robert J. Sukenik, Bloomfield Hills, Mich., assignor to New Hudson Corporation, New Hudson, Mich.

Division of Ser. No. 304,610, Nov. 8, 1972, Pat. No. 3,807,013.

This application Sept. 4, 1973, Ser. No. 393,728

Int. Cl. B21b *31/08*

U.S. Cl. 29—132 **2 Claims**



1. A roll for carrying a markable product through a lehr, furnace or oven comprising a relatively rigid cylindrical body and a seamless sleeve on said body and secured thereto, all portions of said sleeve between its inner and outer surfaces being fabricated solely of fibrous material selected from the group containing "Kaowool," "Fiberfrax," amorphous silica, mineral wool, glass, quartz and metallic wool, and a binder, the concentration of fibers in said sleeve varying in a radial direction, whereby concentric zones of varying resiliency and strength are created, said zones being radially continuous and uninterrupted between said inner and outer surfaces.

3,852,863

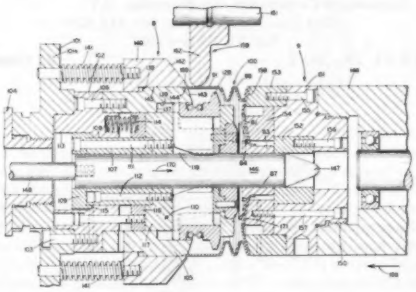
METHOD OF MAKING MULTI-GROOVE PULLEYS

Robert J. Killian, North Canton, and Nolte V. Sproul, Canton, both of Ohio, assignors to Aspro Inc., Canton, Ohio

Filed Oct. 19, 1973, Ser. No. 407,942

Int. Cl. B21k *1/42*

U.S. Cl. 29—159 R **12 Claims**

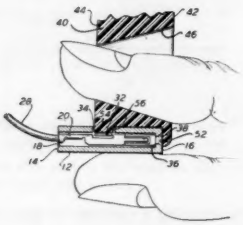


1. In a method of making a spun multi-V-groove sheet metal pulley, the steps of forming a cup-shaped sheet metal blank with a cup bottom wall, a cylindrical side wall, a corner between the bottom and side walls, and a side wall open end; then first stage spinning two adjacent and connected V-grooves in the cylindrical cup side wall, adjacent the bottom wall and connected to the corner, and spaced from the open end by a cylindrical wall portion thereby forming an intermediate first stage double-groove spun product; internally cylindrically-supporting said cylindrical wall portion between the open end and the two grooves being spun during the first stage spinning operation; and then second stage spinning at least a third V-groove in the cylindrical side wall portion between the open end of the cup and the first stage formed double-groove to form a multi-V-groove pulley.

3,852,864
CONTACT REMOVAL TOOL FOR ELECTRICAL CONNECTOR

Donald C. Kirk, Jr., Naugatuck, Conn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Jan. 11, 1974, Ser. No. 432,748
Int. Cl. B25b *27/02*
U.S. Cl. 29—203 H **6 Claims**



3. A hand tool for removing electrical contacts from a housing, wherein each contact includes a spring latch which engages a latching shoulder formed by an opening in said housing, the improvement comprising:

said tool having a first reference surface for locating said tool against said housing;

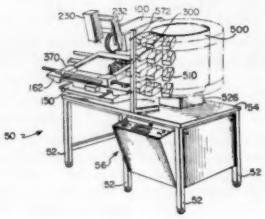
said tool having an extending protrusion located from said first reference surface for extension into said opening to engage and displace said spring latch from said latching shoulder in said housing;

whereby said electrical contact may be removed from said housing upon displacement of said spring latch by said extending protrusion.

3,852,865
SEMI AUTOMATIC ELECTRONIC COMPONENT ASSEMBLER

Phillip A. Ragard, Binghamton, N.Y., assignor to Universal Instruments Corporation, Binghampton, N.Y.

Filed Oct. 30, 1973, Ser. No. 411,029
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 B **22 Claims**



1. A device for assembling manually inserted electrical components with leads extending from a single side to a workpiece comprising:

means for positioning said workpiece relative to a fixed point;

means for indicating on said workpiece the location and orientation of the component to be manually inserted;

means for indicating location of a supply of said component to be inserted;

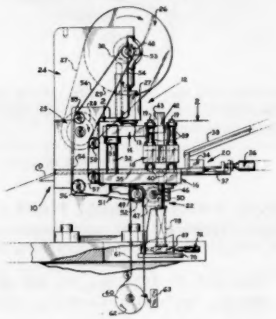
means rotatably mounted below said fixed point for cutting and clinching said leads of said inserted electrical component; and

control means for activating said positioning means, both of said indicating means and said cutting and clinching means, whereby said cutting and clinching means is rotated for the orientation of said indicated component on the positioned board.

3,852,866
TERMINAL LOADER

Hardie B. Johnson, Etters, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 19, 1973, Ser. No. 417,360
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 B **14 Claims**

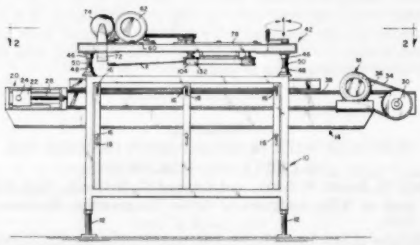


1. Electrical terminal loading apparatus comprising means for feeding a terminal strip in a longitudinal path to a loading station at which one of plurality of terminals thereof is severed therefrom and loaded to one of a number of terminal-receiving cavities of an insulating or other block, means for so severing terminals from said strip and successively loading said terminals, and a block-indexing mechanism for progressively locating the block cavities in a loading position at said station, said mechanism comprising a block-engaging member, and a rotatable cam device to shift said member in a first direction to engage a block and to then index the engaged block in a second direction at an angle to the first direction to said loading position.

3,852,867
BOTTLE DECAPPING SYSTEM

George W. Risener, 4014 Barcelona St., Tampa, Fla. 33609

Filed July 9, 1973, Ser. No. 377,287
Int. Cl. B23p *19/04*
U.S. Cl. 29—208 B **20 Claims**



1. In a bottle handling system including conveyor means for travelling empty bottles along a predetermined path, which bottles may have screw caps engaged thereon, and decapping means for removing the screw caps from the bottles as they travel along said path, said decapping means comprising:

cap engaging means disposed above said conveyor means for engaging opposite sides of screw caps on the bottles

during a selected length of travel of said bottles along said path, said cap engaging means including an endless belt essentially parallel to said path and means for driving said belt at a linear speed greater than that of said conveyor means whereby to unscrew the caps and cause the bottles to be pressed downwardly against said conveying means as a result of such unscrewing action.

3,852,868

MACHINE FOR THE MANUFACTURE OF GARLANDS

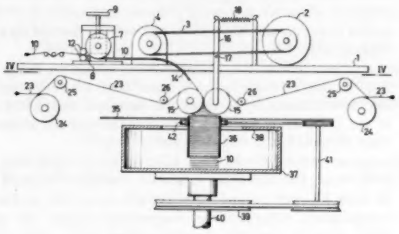
Gerd Rodermund, Inderbreite 24, and Helmut Kappus, both of Lahr, Germany, assignors to said Rodermund, by said Kappus

Filed Nov. 7, 1973, Ser. No. 413,508

Claims priority, application Germany, Oct. 4, 1973, 7335892[U]

Int. Cl. B23p *19/04*

U.S. Cl. 29—208 D **7 Claims**



1. A machine for the manufacture of garlands incorporating a cutting device for spreading out a plastic sheet strip between a cutting roller and a cutting bar at both sides of the longitudinal center line of the strip, so that there remains a narrow uninterrupted web, with a pair of feed rollers for the spread-out strip together with twistable wires or threads introduced at both sides of the strip in parallel to the uninterrupted web, and with a cylindrical drum rotating around its vertical axis, into which the spread-out strip is directed together with the twistable wires centrally from above through a twisting tube, characterized in that the feed rollers are each provided with a central metallic section and two elastic end sections made of rubber, an adjustable braking device is associated with the twistable wires or threads in a way that the forwarding speed of the plastic sheet strips into the pair of feed rollers is between three and 30 times greater than that of the twistable wires or threads, and that the diameter of the drum is such as to provide for a sufficient pull for pulling forward and twisting the garland.

3,852,869

METHOD AND APPARATUS FOR REMOVING INTERLOCKING FASTENER ELEMENTS FROM A SLIDE FASTENER CHAIN

Hideo Shimai, Kurobe, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 20, 1973, Ser. No. 417,531

Claims priority, application Japan, Nov. 28, 1972, 47-119131

Int. Cl. B23p *11/00, 19/04*

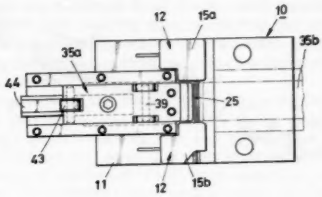
U.S. Cl. 29—408 **4 Claims**

1. A method of removing a length of fastener elements from a slide fastener chain consisting of a pair of opposed stringer tapes carrying thereon uninterrupted rows of continuous fastener elements in interlocked relation, element-securing members affixing said rows of elements to the respective tapes, each of said elements having a coupling head, two arm portions and connecting portions merging into adjoining elements, which method comprises the steps of:

a. anchoring the coupling head portions of a length of interlocked elements into a position registering with the path of a severing means;

b. loosely gripping the connecting portions of said length of elements;

c. biasing the element-securing members inwardly along the arm portions of said length of elements thereby to expose the latter portions;



d. firmly gripping the thus exposed arm portions so as to retain said length of elements in position against displacement;

e. severing the interlocked coupling head portions of said length of elements; and

f. pulling said arm portions, while being gripped, outwardly apart from their respective tapes to remove the remaining element debris.

3,852,870

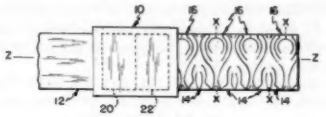
METHOD OF PRODUCING ARTICLES FROM SHEET-LIKE MATERIAL

Stanley B. Elliott, 7125 Conelly Blvd., Bedford, Ohio 44146

Filed Mar. 14, 1973, Ser. No. 341,260

Int. Cl. B23p *17/00*

U.S. Cl. 29—413 **12 Claims**



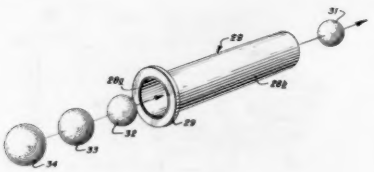
1. In a method of producing figures from sheet-like relatively rigid stock material, comprising, providing a strip of said stock material, cutting blanks from said strip of material of individual items which are substantially symmetrical about the major axis of the respective blank, said axis extending generally transverse of the longitudinal axis of said strip, each said blank being defined at least in part by smoothly curving lines defining the greater part of the exterior configuration of said blank and comprising cuts made in said strip, said cuts being formed generally symmetrically on opposite sides of said major axis of the respective blank, each said blank comprising a body portion, a neck portion and a head portion with said body portion being of larger area as compared to said head portion, making other cuts in said blank body portion, said other cuts defining at least in part sections of the blank which are adapted to be subsequently bent into predetermined configuration to define finalized portions of the figure, reversing alternate blanks end to end during the blank cutting operation thereof and locating the exterior defining peripheries of said blanks in interfitting juxtaposed condition during the blank cutting operation to obtain minimum scrap loss in the stock strip, and including detaching each blank from said strip and bending said neck portion of each said blank into a smoothly curved configuration in the process of producing the finalized figure.

3,852,871

METHOD OF MANUFACTURING A WELL FOR A WASHPOT ASSEMBLY

Reginald A. Read, Jr., Brookfield, Ill., assignor to Regdon Corporation, Brookfield, Ill.

Filed Oct. 1, 1973, Ser. No. 402,477
Int. Cl. B23p 9/00; B21d 39/00; B23p 11/02
U.S. Cl. 29—445 9 Claims



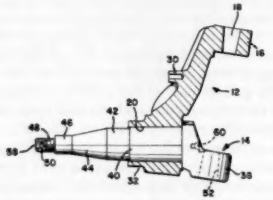
1. A method of manufacturing a well for a dashpot assembly of a damped solenoid wherein a substantially sealed chamber is formed between a reciprocable cylindrical plunger and said well, and such assembly is provided in the field structure of the solenoid, comprising the steps of reducing the diameter of one portion of a seamless tube of a predetermined length and uniform nominal diameter and positioning a support having an inner surface of an accurate predetermined inside diameter around said portion, sizing and contouring said tube with said support therearound to a predetermined accuracy of the size and configuration of the bore within said portion by expanding the tube wall of said portion against said inner surface of said support, whereby said support maintains the size and configuration of said bore within said portion, and closing said tube in an area remote from said portion, for receiving a cylindrical plunger for reciprocation through said portion and toward and away from such closure while maintaining effective fluid-sealing relation with said bore of said portion.

3,852,872

METHOD OF MAKING A KNUCKLE ASSEMBLY

Carlos P. Afanador, Centerville, and Richard L. Jones, West Carrolton, both of Ohio, assignors to Dayton-Walther Corporation, Dayton, Ohio

Division of Ser. No. 297,222, Oct. 13, 1972, Pat. No. 3,801,124. This application Sept. 13, 1973, Ser. No. 396,848
Int. Cl. B23p 11/02
U.S. Cl. 29—447 4 Claims



1. A method of forming a knuckle assembly comprising:
a. casting a one piece base member having a first knuckle projecting outwardly thereof,
b. forming an opening through said first knuckle,
c. forming a spindle opening through said casting with the axis thereof disposed in angular intersecting relationship with said opening through said first knuckle,
d. forging an integral spindle and knuckle, and
e. fixing said spindle in said spindle opening.

3,852,873

METHOD FOR MANUFACTURING AND BRAZING VARIOUS APPARATUSES AND PARTICULARLY HEAT EXCHANGERS

Andre Chartet, Meudon, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France

Filed May 18, 1973, Ser. No. 361,405
Claims priority, application France, May 23, 1972, 72.18338
Int. Cl. B23k 31/02
U.S. Cl. 29—487 19 Claims

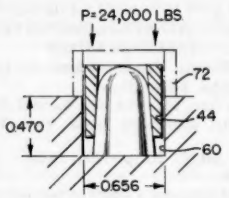
1. Method for manufacturing and brazing various apparatuses and particularly heat exchangers, wherein:
the parts of the apparatus are made from thin sheets of a basic aluminium alloy containing silicon and magnesium able to form a magnesium silicide compound Mg_2Si;
the apparatus is assembled and submitted to action of a cleaning solvent of the greasy products,
the apparatus is heated in presence of an aluminium brazing alloy containing at least 7% and at most 15% of silicon in presence of metals and metal salts causing removal of the oxides covering the basic alloy and wetting thereof by the brazing alloy,
the apparatus is heated to a temperature within the range of 580° to 600°C, whereby at a same time the magnesium silicide is completely set in a supersaturated state solution in the basic alloy keeping a solid state and the brazing alloy is melted and wets said basic alloy,
as soon as wetting of said basic alloy by the brazing alloy is performed, the apparatus is quickly cooled at a speed of at least 1°C per second substantially up to the ambient temperature, whereby the magnesium silicide of said basic alloy is kept in supersaturation state while said brazing allow is solidified and hardened,
then the apparatus is again heated up to a temperature at least equal to 180°C and at most equal to 250°C up to the point to cause a temper causing the magnesium silicide to precipitate while providing an hardening of said basic alloy, and
the apparatus is lastly cooled back to the ambient temperature, whereby the brazing of the parts constituting it is performed along with the heat treatment hardening the alloy constituting said apparatus.

3,852,874

METHOD OF INSERTING BUTTONS IN A DRILLING HEAD

Bernard A. Pearson, Bothell, Wash., assignor to Smith-Williston, Inc., Seattle, Wash.

Division of Ser. No. 303,334, Nov. 3, 1972, , which is a continuation-in-part of Ser. No. 232,695, March 8, 1972, abandoned. This application Dec. 10, 1973, Ser. No. 423,259
Int. Cl. B23p 19/02
U.S. Cl. 29—525 19 Claims



1. A method of installing and holding an externally tapered button in a cylindrical bore in a drilling head by means of an internally tapered metal expansion sleeve, comprising;
forming the sleeve with its outer surface oversized relative to the sidewall surface of the bore and with its inside

surface generally the same shape as the tapered outer surface of the button and undersized relative thereto,

axially pressing the sleeve and button together into a normal working relationship and, while in said relationship, shaping the outer surface of the sleeve to generally the same shape as the sidewall surface of the bore and to a size that is oversized relative to said sidewall surface while the sleeve and button are fully pressed together and that is undersized relative to said sidewall surface when the sleeve is in a relaxed state,

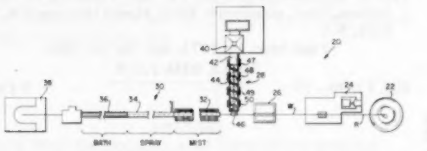
less than fully pressed together, moving the button and sleeve relative to one another sufficiently to permit the sleeve to shrink to said undersize whereat its outer surface is small enough to permit the sleeve to enter the bore without interference and

then pressing the button and internally tapered metal sleeve together in the cylindrical bore until the sleeve is elastically expanded by the button tightly between the button and the sidewall surface of the bore.

3,852,875
HIGH SPEED TANDEM WIRE DRAWING AND INSULATION SYSTEM

Kenneth Wayne McAmis; Lee K. Brewton, both of Carrollton, and Bobby C. Gentry, Temple, all of Ga., assignors to Southwire Company, Carrollton, Ga.

Filed Jan. 5, 1973, Ser. No. 321,128
Int. Cl. B44d *1/44*
U.S. Cl. 29—527.4 **11 Claims**

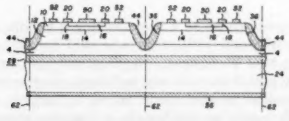


7. A method of producing insulated wire having a minimum diameter corresponding to number 14 AWG size from rod of up to ⅜-inch diameter at speeds in excess of 2,500 feet per minute in a continuous in-line tandem system comprising the steps of drawing and annealing the rod into wire, extruding a plastic coating onto the wire at 400°F., cooling the insulated wire from 400° to 90°F. including initially contacting the insulated wire with an atomized coolant mist to at least partially set the coating with substantially no deformation thereof, and taking up the cooled insulated wire.

3,852,876
HIGH VOLTAGE POWER TRANSISTOR AND METHOD FOR MAKING

Gary S. Sheldon, Union Springs, and Peter S. Shen, Auburn, both of N.Y., assignors to General Electric Company, Syracuse, N.Y.

Division of Ser. No. 320,313, Jan. 2, 1973,. This application Oct. 5, 1973, Ser. No. 403,949
Int. Cl. B01j *17/00*
U.S. Cl. 29—583 **6 Claims**



1. In a method of making power transistors, to steps of

a. providing a junction wafer of monocrystalline silicon containing in stacked relation an outer collector layer of relatively low resistivity exposed at the bottom major face of said junction wafer, an inner collector layer of relatively high resistivity surmounting said outer collector layer, a base layer surmounting said inner collector layer and defining therewith a base-collector P/N junction, and an array of spaced emitter regions on said base layer and defining with said base layer the top major face of said junction wafer;

b. stacking said junction wafer on a silicon carrier wafer with the opposed major faces of said wafers separated by a metallic alloy bonding layer, subjecting the resulting stack to a thermal treatment to form a metallic alloy bond uniting the opposed major faces of the junction wafer and carrier wafer;

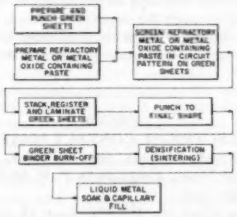
c. forming, between the emitter regions in the exposed top major face of the junction wafer, a family of grooves having a depth extending part way through said outer collector layer and defining a plurality of mesas in said junction wafer with each of said mesas including a portion of said outer collector layer surmounted by a portion of said inner collector layer topped by a base region and an emitter region; and

d. providing a coating of glass passivating material on the sidewalls and bottoms of said grooves and covering the exposed edges of the interfaces between the base and inner collector region in each mesa and the inner collector and outer collector region in each mesa, whereby said wafer stack may be subdivided into individual transistor bodies at separation faces extending generally normal to the major faces of said wafers along the bottoms of said grooves, said step of providing glass material comprising the substeps of depositing glass frit in said grooves and heating said stack to fuse said glass frit.

3,852,877
MULTILAYER CIRCUITS

Junghi Ahn, Wappingers Falls; Bernard Schwartz, Poughkeepsie, and David L. Wilcox, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 850,324, Aug. 6, 1969, and a continuation of Ser. No. 538,770, March 30, 1966, abandoned. This application Apr. 2, 1974, Ser. No. 457,302
Int. Cl. H05k *3/10*
U.S. Cl. 29—625 **7 Claims**


PREPARE AND PUNCH GREEN SHEETS
PREPARE REFRACTORY METAL OR METAL OXIDE CONTAINING PASTE
SCREEN REFRACTORY METAL OR METAL OXIDE CONTAINING PASTE IN CIRCUIT PATTERN ON GREEN SHEETS
STACK, REGISTER AND LAMINATE GREEN SHEETS
PUNCH TO FINAL SHAPE
GREEN SHEET BINDER BURN-OFF
DENSIFICATION (SINTERING)
LIQUID METAL SOAK & CAPILLARY FILL

1. A method for manufacturing a multilayer ceramic circuit board with interconnected conductors disposed in different layers, said method comprising the steps of:

preparing a plurality of green ceramic sheets of ceramic material dispersed in a heat volatile binder;

forming holes at predetermined locations in said sheets;

preparing a paste composition comprising a metallizing media dispersed in a heat volatile binder, said media being selected from the group consisting of refractory metals and compounds thereof which density when sintered at a temperature higher than the temperature at which said ceramic densifies when sintered;

depositing said paste composition on surface areas of said green sheets including surface areas within said holes;

stacking said sheets one upon another in registry such that patterns on and holes in different sheets are superposed in a desired circuit pattern;

laminating said sheets;

heating said laminate at a temperature high enough to drive off said binders, sinter said ceramic to a dense state and bond said metal to said ceramic but lower than a temperature at which said metal densifies when sintered to form thereby a continuous porous metallic capillary path in coincidence with said circuit pattern; and

filling said capillary path with a molten conductor in a reduced pressure atmosphere to complete said circuit pattern.

3,852,878

COIL WOUND ELASTOMER CONNECTOR

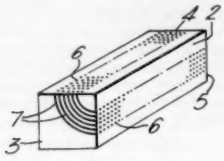
Geoffrey Hector James Munro, London, England, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 2, 1973, Ser. No. 320,030

Claims priority, application Great Britain, Jan. 29, 1972, 4327/72

Int. Cl. H02g *15/00*

U.S. Cl. 29—629 **5 Claims**



1. A method of manufacturing a connector body comprising a multiplicity of spaced resilient conductive springs disposed within a matrix of elastomeric insulating material defining a body having spaced surface parts between which the springs extend in non-rectilinear paths and at which ends of the springs are exposed, said method comprising the steps of winding a plurality of wires into individual coils of flat turns at spaced intervals axially of a cylindrical former, interleaving a sheet of elastomeric material in a manner so as to be common to the plurality of wires, said elastomeric material being wound in a coil disposed between each turn of the individual coils of said wires, bonding adjacent layers of the elastomeric sheet material through the interwire spaces to form a coherent matrix, and cutting through the coil turns to define the connector body with cut portions presenting the spaced surface parts.

3,852,879

ELECTRICAL CONTACT MATERIAL

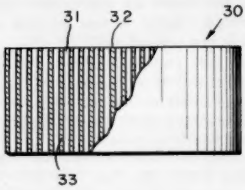
Richard H. Krock, Peabody, and Edward J. Zdanuk, Lexington, both of Mass., assignors to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Continuation of Ser. No. 762,570, Sept. 25, 1968, abandoned. This application Apr. 22, 1971, Ser. No. 136,543

Int. Cl. H01r *9/00*

U.S. Cl. 29—630 C **7 Claims**

1. A method of making electrical contact material having a low gaseous component content and components which may be converted to gas which consists essentially of 30 to 90 volume percent refractory metal, the remainder of soft metal wherein the refractory metal is an array of refractory metal wires having a diameter of 1 to 50 mils substantially perpendicular to the working surface of the contact material, the method comprising the steps of providing a closely packed bundle of refractory metal wires pretreated in a reducing atmosphere at elevated temperatures to effect at least some cleansing thereof, vacuum degassing the bundle of refractory metal wires at a temperature above the pretreatment temperature but below the sintering temperature of the refractory metal to reduce the content of gaseous components and components which may be converted to gas to less than 10ppm, and contacting the bundle of refractory metal wires with



molten soft metal in a vacuum to infiltrate void spaces between the refractory metal wires to provide contact material having the adjacent refractory metal wires separated by no more than 0.75 of the diameter of the largest refractory metal wire at the working surface of the electrical contact material.

3,852,880

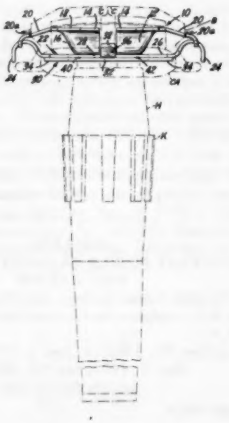
APPARATUS FOR LIMITING SHAVING GEOMETRY VARIATION IN SAFETY RAZORS

Paul A. Braginetz, Staunton, Va., and Frederick L. Risher, Jackson, Miss., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Mar. 28, 1973, Ser. No. 345,546

Int. Cl. B26b *21/18*

U.S. Cl. 30—77 **7 Claims**

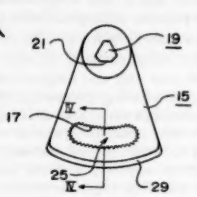


5. In combination in a razor having a handle: a blade seat fixedly positioned with respect to said handle; a blade supported by said blade seat; a resilient member having a blade guard integral therewith and yieldingly responsive to shaving forces applied to said blade guard to variably position the same with respect to said handle and relative to said blade seat to vary the cutting angle of said blade; and a rigid member disposed in underlying relation to said resilient member and engageable therewith to limit such blade cutting angle variation.

3,852,881
CUTTING BLADE FOR USE WITH AN OSCILLATING CUTTING DEVICE

James T. Treace, Santa Monica, Calif., assignor to Richards Manufacturing Company, Memphis, Tenn.

Filed June 11, 1973, Ser. No. 368,656
Int. Cl. B23d 45/00; B26b 25/00
U.S. Cl. 30—92 12 Claims

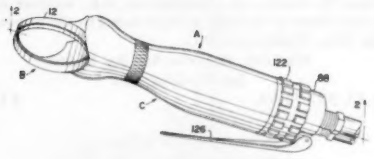


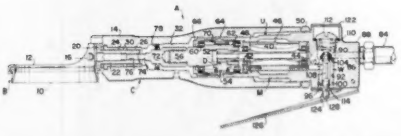
1. A cutting blade for use with an oscillating cutting device in cutting off fracture-fixation pins, said cutting blade comprising:
   a. a body portion having an attachment member for mounting said body portion onto the oscillating cutting device and having an elongated aperture spaced away from said attachment member; and
   b. a cutting portion located around the entire periphery of said elongated aperture for allowing said cutting portion to selectively contact all portions of the circumference of the fracture-fixation pin being cut off to smoothly cut off the fracture-fixation pin.

3,852,882
AIR DRIVEN BONING AND TRIMMING KNIVES

Louis A. Bettcher, Amherst, Ohio, assignor to Bettcher Industries, Inc., Birmingham, Ohio

Filed Jan. 28, 1974, Ser. No. 437,526
Int. Cl. B26b 15/00
U.S. Cl. 30—276 8 Claims



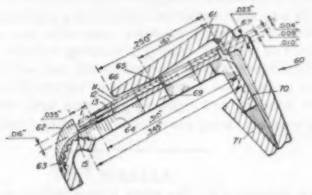


1. A hand-manipulated knife comprising a blade supporting structure substantially annular in shape and including a tubular handle projecting from one side thereof, a ring-shaped blade of short axial length rotatably supported in said structure with a cutting edge at one end projecting from one side of said structure and gear teeth adjacent its other end, a first gear rotatably supported in one end of said handle and in mesh with said gear teeth on said blade for rotating said blade, a fluid pressure activated rotary motor comprising a rotor rotatably supported in a housing stationary in said handle, external gear teeth on an extension of said rotor projecting towards said blade, a member rotatably supported in said handle intermediate said motor and said first gear, a tubular member stationary in said handle intermediate said motor and said first gear provided with internal gear teeth, a second gear rotatably supported by said member and in mesh with said external and said internal gear teeth, means connecting said member to said first gear, and valve means in said handle for controlling the flow of fluid to said motor.

3,852,883
SHAVING UNIT FOR SAFETY RAZOR

Frank A. Ferraro, Trumbull, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Continuation-in-part of Ser. No. 408,848, Oct. 23, 1973, abandoned, which is a continuation-in-part of Ser. No. 398,104, Sept. 17, 1973,. This application Dec. 13, 1973, Ser. No. 424,255
Claims priority, application Great Britain, Jan. 23, 1973, 3365/73
Int. Cl. 30 76; B26b 21/54, 21/22
U.S. Cl. 30—346.58 20 Claims

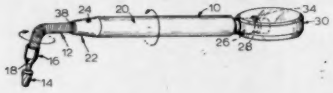


1. A replaceable shaving unit for a safety razor, wherein said razor comprises a transverse guard surface, spaced stop means for locating said shaving unit with respect to said guard surface, a blade seat member, a cap member extending forwardly above said blade seat member, and means for biasing said shaving unit in abutting engagement with said stop means and said blade seat member upwardly to clamp said shaving unit between said cap and said blade seat member, said shaving unit comprising:
   a. a spacer member including a transversely elongated center portion, a pair of spaced projections extending forwardly from said center portion, a raised portion on each one of said projections, an underside, and an upper side;
   b. a first razor blade connected to said underside, said first razor blade including a lower surface for abutting engagement with said blade seat member and an elongated cutting edge dimensioned for locating each outer end thereof behind a respective one of said stop means to prevent contact with the ends of the first blade cutting edge during use; and
   c. a second razor blade connected to said upper side, said second razor blade including an upper surface for abutting engagement with said cap member and an elongated cutting edge positioned above said projections and rearwardly and parallelly with the cutting edge of said bottom razor blade, the cutting edge of said second razor blade having each outer end thereof located behind and spaced rearwardly from a respective one of the raised portions to prevent contact with the ends of the second blade cutting edge during use;
   d. said second razor blade having a predetermined thickness, and the raised portions extending upwardly from said projections a distance less than said predetermined thickness.

3,852,884
WINDING AND TIGHTENING TOOL AND METHOD FOR MANUFACTURING SAME

Harry J. Lazarus, 36 Knox Ln., Englishtown, N.J. 07726

Filed Oct. 18, 1973, Ser. No. 407,419
Int. Cl. A61c *5/12*
U.S. Cl. 32—63 **21 Claims**

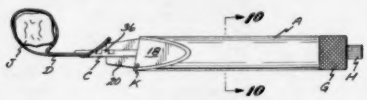


1. An angle drive manually operable tool to wind and tighten around a tooth a matrix band formed into a loop and having one end spirally wound to form a band-tightening coil provided with a central socket, said tool comprising in combination, an elongated driving member, a palm grip rotatably mounted upon one end of said member for movement about the axis thereof, a coreless rotatable flexible drive sleeve unit with sockets at each end thereof, with said sleeve having an internally pivotable angularly bent guide shaft therein, said shaft being bent prior to assembly and is internally suspended thereafter through the length of the core of the flexible sleeve unit, with said shaft's terminations rotatably engaged with sockets to hold said shaft against axial disposition at each end, and with one such socketed collar being replaceably engageable with said driving member, and with the other socket being part of a chuck, having a winding member adapted for controlled depth insertion in said chuck and with said winding member engageable with the central socket of a matrix band coil for winding and tightening of said coil, and with said driving member being provided with a torque limiting means.

3,852,885
TEAR RESISTANT MATRIX CONFINING BAND AND RETAINER FOR USE THEREWITH

Edward Brenner, 800 W. Ameriga Ave., Fullerton, Calif. 92632

Filed Feb. 20, 1973, Ser. No. 333,989
Int. Cl. A61c *5/12*
U.S. Cl. 32—63 **8 Claims**



1. In combination with an elongate tear-resistant, resilient dental matrix-confining band, which when formed into a loop, defines two sections having portions thereof in abutting contact, in which portions a plurality of longitudinally spaced, transversely aligned openings are formed that are partially defined by first forwardly disposed transverse edges of said band, a retainer for disposing said looped band in a tensioned encircling position on a tooth in a patient's mouth, which retainer includes:

a. a rigid elongate barrel of non-circular transverse cross section that has a first forward end portion in which a longitudinal slot is formed that is in communication with a longitudinal bore that extends to a second end of said barrel, said first end portion being defined by a forwardly extending cantilever member on a first side of said slot and an inwardly and forwardly tapered face on a second side of said slot, with said cantilever member being on the side thereof adjacent said tapered face having a longitudinally extending guide groove formed therein that is in alignment with and communicates with said bore;

b. a tubular cover of non-circular transverse cross section that slidably and frictionally engages the exterior of said barrel and envelops at least that portion thereof in which said slot is formed, with said cover on a first forward end thereof terminating at substantially the rear end of said cantilever member, and said cover cooperatively providing a longitudinal confined space open at the forward end thereof;

c. an elongate rod having a first end and a second end and threads formed thereon intermediate therebetween, which first end has a first longitudinal recess formed therein and a plurality of longitudinally spaced transverse recesses rearwardly therefrom, with each of said transverse recesses being partially defined by a transverse body shoulder, and with said longitudinal recess and said transverse recesses having rod portions therebetween that engage said openings when said abutting sections extend rearwardly in said confined space in contact with said rod, with said rod when moved rearwardly relative to said barrel and cover applying a force through said body shoulders to said first edges to tension said band in a looped configuration about a tooth, and said band due to the plurality of the areas of said first edges through which said force is exerted, not tearing as a result of said force so applied;

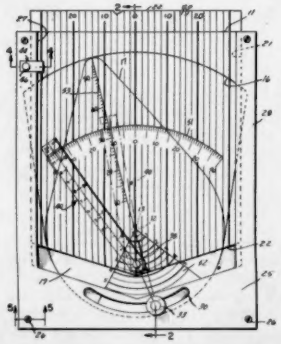
d. a nut slidably and rotatably mounted on said rod rearwardly of said threaded portion, with said nut when rotated in engagement with said threaded portion and in abutting contact with said second end of said barrel moving said rod rearwardly relative thereto; and

e. a handle on said second end of said rod for moving said rod forward relative to said longitudinal slot in the elongate barrel when said nut is not in engagement with said threaded portion, to the extent said abutting portions of said band sections are moved out of said confined space in which they are held in a non-rotatable position relative to said barrel and are at least partially disengaged from said rod when said barrel is rotated 90° relative to said rod to move said abutting band sections into pressure contact with said cantilever member of said barrel, with said rod when said rotation takes place remaining aligned with said bore due to slidably and rotatably engaging groove in said cantilever member.

3,852,886
ANGLE SOLVER PLOT BOARD

Herbert W. Headle, Jr., Middletown, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 19, 1970, Ser. No. 82,062
Int. Cl. G06g *7/80*
U.S. Cl. 33—76 VA **4 Claims**



1. A device for solving relative motion problems comprising:

an assembled multilayer framework including a rectangular

base plate, a lower frame member having its center portion cut away, an upper frame member having its center portion cut away and a top frame member having side margins which overlap the adjacent cutaway portion of the upper frame member;

a rotor disposed in the cutaway portion of said lower frame member,

said rotor pivotally mounted on said base plate and having a semicircular base portion and a conical top portion adapted for transverse movement between the margins of said top frame member;

a slide disposed in the cutaway portion of said upper frame member;

an arm rotatably mounted in the lower center of said slide; means for locking said rotor and said slide in position;

a torpedo pre-enable speed scale on the conical top portion of said rotor and a laminar distance offset scale on the semicircular base portion of said rotor;

a target speed across line of sight scale and a torpedo lead angle scale on said slide; and

a torpedo enable range scale and a torpedo post-enable speed scale on said arm,

whereby multispeed torpedo attack problems may be quickly and accurately solved as well as speed, distance and time triangulation problems.

3,852,887

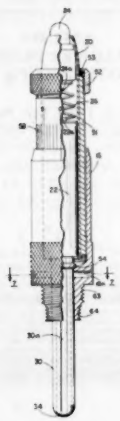
APPARATUS FOR INDICATING ENGINE PISTON POSITION

Donald F. Hennrick, Torrance, Calif., assignor to Zed Vickers, Long Beach, Calif.

Continuation-in-part of Ser. No. 206,785, Dec. 10, 1971, abandoned. This application Dec. 26, 1972, Ser. No. 318,532

Int. Cl. G01b *3/28, 5/14*

U.S. Cl. 33—181 AT **9 Claims**



1. A device for indicating when a piston of an internal combustion engine has reached a predetermined position within a cylinder having a spark plug aperture comprising:

casing means comprising an inner sleeve, a first tube member fixedly attached to said sleeve and a second tube member threadably attached to said first tube member,

a dry cell mounted in said inner sleeve,

an indicator lamp mounted in said inner sleeve with one of the electrical contacts thereof opposite one of the electrical contacts of said dry cell,

means for resiliently urging said dry cell away from said indicator lamp,

actuator means slidably mounted in said second tube member, with one end of said actuator means protruding out from one end of said second tube member and the other end of said actuator means abutting against said dry cell, said one end of said casing means being adapted to fit to the sparkplug aperture of the engine cylinder with said one end of said actuator means extending into the cylinder, and

calibrated means comprising indicia on at least one of said tube members, said tube members being adjustable on their threaded attachment to effect relative longitudinal movement therebetween for adjusting said device to set the position of said actuator means whereat the oppositely positioned contacts of said dry cell and said lamp will contact each other so as to actuate said lamp.

3,852,888

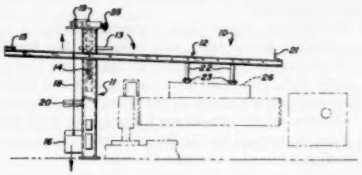
ROLL LEVEL CHECKING DEVICE

Gerald R. Seifert, Munster, Ind., assignor to Inland Steel Company, Chicago, Ill.

Filed July 20, 1972, Ser. No. 273,501

Int. Cl. G01b *5/24*; **G01c** *1/00*

U.S. Cl. 33—286 **7 Claims**



1. A slope measuring device comprising:

sighting means;

means for mounting said sighting means adjacent an object whose slope is to be measured;

slope sensing means associated with said sighting means comprising a scale and at least two spaced slope contact points for defining the line whose slope is to be measured; means connecting said spaced contact points and said scale in predetermined spaced relation with respect to each other and to an axis which is orthagonal to the line of sight of said sighting means and fixed with respect thereto;

means for moving said slope sensing means to a reference position in which the spaced slope contact points are parallel to a reference plane to obtain a first sight reading on said scale means; and

means for moving said slope sensing means vertically together with said sighting means transverse to the line of sight of said sighting means and pivotally independent of said sighting means about the said axis which is orthagonal to said sighting means and fixed with respect thereto, to a second position in which the spaced slope contact points are parallel to the slope of said object to be measured to obtain a second sight reading on said

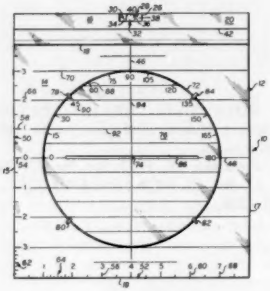
scale, whereby the differential between said first and second sight readings is a measure of the slope of said object.

3,852,889

DEVICE FOR MAKING PERSPECTIVE DRAWINGS

Thomas W. Atkins, 425 E. 75th St., New York, N.Y. 10021

Continuation of Ser. No. 39,005, May 20, 1970, abandoned. This application Mar. 30, 1972, Ser. No. 239,827
Int. Cl. B43l *13/16*
U.S. Cl. 33—277 **1 Claim**



1. A graphic aid for drawing a perspective drawing of a scene, comprising:

a transparent planar base member having a vertically extending frame edge, said base member having a pair of horizontal parallel lines thereon, one line being on each of the front and back surface and said lines defining a plane perpendicular to the plane of said base member whereby to provide means for orienting said planar base member normal to the line of sight, said base member having a circular aperture therein;

a transparent circular member rotatably mounted in said aperture and having an elongated slot along a portion of a diameter thereof to define a straight edge alignable with a persepective line of said scene, said rotatably mounted member including means associated therewith for indicating the relative angle of rotation of said straight edge in the plane of said base member from a reference position;

a horizontal bubble level fixed to said base member for orienting said parallel lines horizontal;

said base member further comprising a rectangular framing portion including a pair of orthogonal means for indicating the relative position of said perspective line with respect to a horizon;

said transparent circular member having a vertical and a horizontal axis and being rotatably mounted with said vertical and horizontal axes substantially disposed along paths which respectively bisect said orthogonal means when said straight edge portion horizontal axis is aligned with one of said paths, said horizontal axis being parallel to the horizon;

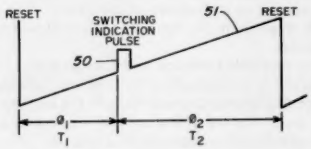
said orthogonal means each including a plurality of equispaced indicia, one of said orthogonal means being disposable parallel to said horizontal axis, the other of said orthogonal means being disposable parallel to said vertical axis, said vertical disposable orthogonal means including a plurality of spaced apart guide lines parallel to said horizontal disposable orthogonal means including a plurality of spaced apart guide lines parallel to said horizontal disposable orthogonal means.

3,852,890

REMOTE READING TILT ENCODER

Earl Everett Locklair, Greenville, and Donald James Halsey, Garland, both of Tex., assignors to E-Systems, Inc., Dallas, Tex.

Filed Mar. 2, 1972, Ser. No. 231,309
Int. Cl. G01c *9/16*
U.S. Cl. 33—366 **11 Claims**



1. A tilt sensing system comprising:

first means for producing a position signal varying in magnitude with the position of a body with respect to a gravity vector through a pivot thereof;

second means connected to said first means for generating a ramp signal, the magnitude of said ramp signal starting at a reference level and having a linear increase with time related to the position signal;

third means connected to said second means for generating a pulse signal to be superimposed upon said ramp signal at a pre-established magnitude thereof whereby the time elapsed for the ramp signal to increase from the reference level to the pre-established magnitude is proportional to the value of said position signal; and

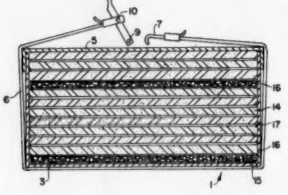
circuit means responsive to said third means to superimpose the pulse signal on said ramp signal.

3,852,891

FLOWER PRESS

Barbara B. Stephan, 4334 Round Top Dr., Honolulu, Hawaii 96822

Filed Oct. 3, 1973, Ser. No. 403,266
Int. Cl. F26b *13/26*
U.S. Cl. 34—95 **13 Claims**

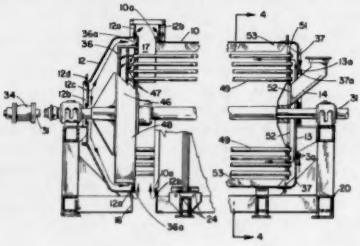


1. A quick drying flower press comprising a bottom portion with a base and sidewalls, and having a cover portion with a top and complementary sidewalls fitting with the sidewalls of the bottom portion **17** a tight relationship, a plurality of thin, flat, porous material, sponge-like layers stacked in the container and fitting closely within the sidewalls of the bottom portion and superimposed upon each other and extending upward beyond an upper rim of the bottom portion sidewalls, botanical objects disposed between the superimposed thin sponge-like layers, and fastener means mounted on the bottom and cover portions for urging the portions together in compression of the thin sponges whereby the botanical objects are pressed and dried while the container is closed.

3,852,892
ROTARY DRUM DRYER

Daniel J. Sheehan, P.O. Box 430, Danville, Ill. 61832

Filed May 6, 1974, Ser. No. 466,958
Int. Cl. F26b *11/02*
U.S. Cl. 34—134 3 Claims

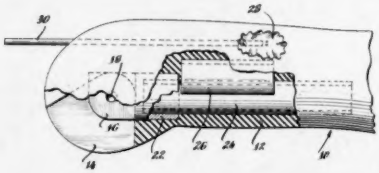


1. A rotary drum type dryer for grannular material comprising: a rotatably mounted drum and an interior heating element mounted for independent concentric rotation within the drum, means for independently rotating said drum and said heating element, a stationary plate at one end of said drum having a material inlet tube extending therethrough and into the drum interior, annular adjacent flanges on said drum and said plate defining an annular restricted air intake passage from the exterior to the interior of the drum, a stationary housing at the other end of said drum into which said drum extends, adjacent annular flanges on said drum and said stationary housing defining a further annular restricted air intake passage to the interior of said drum and housing, a material discharge opening at the base of said housing and an air discharge opening at the upper end of the housing, and air moving means for drawing air from said drum through said air discharge opening.

3,852,893
TRAINING DUMMY WITH SIMULATED WOUND

Joseph G. Smrcka, Norwalk, Conn., assignor to Alderson Research Laboratories, Inc., Stamford, Conn.

Filed Nov. 19, 1973, Ser. No. 417,363
Int. Cl. G09b *23/30*
U.S. Cl. 35—17 5 Claims

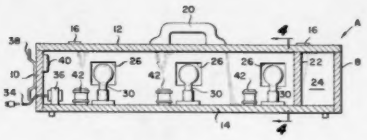


1. The method of forming a simulated wound in a training dummy which comprises: providing a first concave mold member defining on its inner surface a raised, wound defining, projection; providing, adjacent said projection, means for temporarily supporting the end of a wire; passing a relatively stiff support wire through a length of resilient tubing with the first and second ends of said wire extending; respectively, from the first and second ends of said tubing; positioning the wire stiffened tubing with the first end of said wire supported by said temporary support means and the second ends of said wire and tubing outside the first mold member; positioning a second concave mold member against said first mold member to define therewith a mold cavity approximating the shape of a human body member; filling said cavity with a curable molding composition; curing said composition to form a simulated human body member; removing said support wire from said tubing; and removing said simulated body member from said first and second mold members.

3,852,894
PORTABLE ELECTRIC QUIZ ANNUNCIATOR

Earvin Ryland, 904 Sherwood Dr., Ruston, La. 71270

Filed Jan. 29, 1973, Ser. No. 327,443
Int. Cl. G09b *5/00*
U.S. Cl. 35—48 R 1 Claim



1. A portable, self-contained electric quiz annunciator adapted to be placed on a table or the like comprising:

a. an elongated housing including a front wall, a rear wall opposite said front wall and a top wall positioned between said front and rear walls,

b. said rear wall sloping away from said top wall,

c. said housing being of a size and shape permitting a plurality of competing contestants to be observed from a position in front of said housing when sitting behind same,

d. said housing including a compartment adapted to store associated paraphernalia,

e. handle means for carrying said annunciator secured to said top wall,

f. means associated with one of said walls to permit said last mentioned wall to be opened thereby permitting access to the interior of said housing,

g. a plurality of longitudinally aligned light means supported within said housing for indicating when each contestant has answered,

h. said front wall including means for viewing from outside said housing said plurality of light means,

i. said means for viewing including a plurality of longitudinally aligned apertures in said front wall,

j. a plurality of longitudinally aligned contestant operated switches mounted externally on said rear wall and arranged to permit a single contestant to be seated behind each of said switches,

k. said plurality of switches, light means and apertures being aligned from front to rear such that individual ones of said plurality of switches are positioned directly behind individual ones of said plurality of light means and apertures to thereby visually associate each of said plurality of light means with a particular contestant,

l. circuit means mounted within said housing for interconnecting said plurality of switches, said plurality of light means and a source of power to activate one of said plurality of light means upon the closing of that one of said plurality of switches positioned behind said last mentioned one of said plurality of light means and simultaneously render the others of said plurality of light means inoperable when said last mentioned one of said light means is activated, and

m. an electrically operated buzzer supported within said housing,

n. said circuit means including means for activating said buzzer simultaneously with the activation of said one of said light means to emphasize the fact that a contestant has answered.

3,852,895

SHOES OR BOOTS

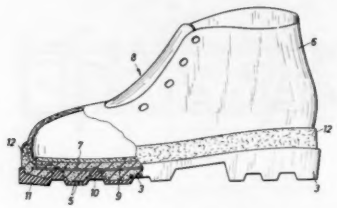
Herbert Funck, Graefelfing-Lochham, Germany, assignor to Dr. Ingo. Funck KG, Munich-Pasing, Germany

Filed Apr. 5, 1973, Ser. No. 348,072

Claims priority, application Germany, Apr. 5, 1972, 2216439

Int. Cl. A43d *9/00;* **A43b**

U.S. Cl. 36—2.5 R **7 Claims**



1. An article of footwear comprising an outsole, a sole shell, an insole and an upper, wherein, the outsole is formed as an internally and externally ridged member having a peripheral wall and defining a cavity on an inner side thereof, the sole shell is formed of reaction foam during a foaming operation and interfits with the outsole inner side, the insole is connected to an inner surface of the sole shell and the upper, lower peripheral edge portions of the upper being connected between the insole and the sole shell, the outsole being connected to the insole and upper via the sole shell during said foaming operation.

3,852,896

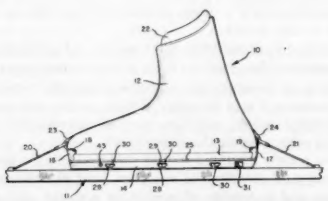
SAFETY RELEASE SKI BOOT SYSTEM

Ewald D. Pyzel, and Harold E. Codding, both of 3430 Cashill Blvd., Reno, Nev. 89502

Filed Mar. 6, 1974, Ser. No. 448,508

Int. Cl. A43b, A63c *9/00*

U.S. Cl. 36—2.5 AL **18 Claims**



1. Safety release ski boot system comprising a ski boot assembly having a boot upper body, a fixed upper sole attached to the upper body, a detachable lower sole normally secured to the upper sole and a safety release mechanism contained within the detachable lower sole of the ski boot assembly, said detachable lower sole being releasably secured to the fixed upper sole of the ski boot assembly by said safety release mechanism, said safety release mechanism comprising:

at least two rotatable latch members one of which is pivotally mounted on the lower sole at the forward end thereof and another of which is pivotally mounted on the lower sole at the rearward end thereof, each of said latch members being rotatable about its pivot axis from a lowermost ski boot release position to an uppermost ski boot engaging position and return, and

separately adjustable spring means engaging each rotatable latch member at a pivot point eccentric with respect to the pivot axis of said latch member, each adjustable spring means urging the latch member with which it is associated to its uppermost ski boot engaging position when the latch member is rotated so that the eccentric pivot point is positioned below the pivot axis and said spring means urging said latch member to its lowermost ski boot release position when said latch means is rotated so that the eccentric pivot point is positioned above the pivot axis of the latch member.

3,852,897

FOOTWEAR

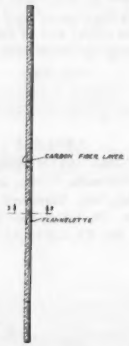
Frank Bridge, 529 Church Rd., Bolton, and Tej Kuldip Singh, 1 Wharfsdale Gardens, Baildon, both of England

Continuation of Ser. No. 140,255, May 4, 1971, abandoned. This application Jan. 26, 1973, Ser. No. 326,729

Claims priority, application Great Britain, July 23, 1968, 35075/68

Int. Cl. A43b *13/38*

U.S. Cl. 36—44 **14 Claims**



1. An insock, for insertion into a shoe comprising a fibrous web or mat loaded with active carbon and a binder, the binder being disposed predominantly at and adjacent to the surfaces of the web or mat.

3,852,898

SHOE WEAR ELEMENT

Harry Ernest Rubens, 14 Brookside Ct., East Brunswick, N.J. 08816

Filed July 23, 1973, Ser. No. 381,852

Int. Cl. A43b *13/22*

U.S. Cl. 36—73 **9 Claims**

1. A replaceable, multipositioned less than completely circular thin planar wear heel element for mounting to a wear position over the edge of the rear heel wear portion of a shoe,

each element having a plurality of identical heel edge conforming contours about the periphery of the element so as not to project substantially over the edge of the wear portion of the shoe, and having a thickness to permit comfortable wear on the wear surface of an existing shoe, and fastening means for releasably securing said thin planar element to the wear

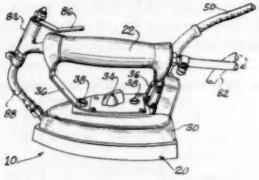
surface of the shoe when one of said edge conforming contours are worn, whereby the thin planar element may be moved in the plane of said element and repositioned on the wear portion with another contour of said element conforming to the contour of the edge of the wear portion of the shoe for continued use.

3,852,899

COMMERCIAL STEAM GENERATING HAND IRON

George R. Mackey, Evanston, Ill., assignor to Bishop Freeman Company, Evanston, Ill.

Filed Mar. 29, 1974, Ser. No. 456,043
Int. Cl. D05f *75/05*
U.S. Cl. 38—77.6 **9 Claims**



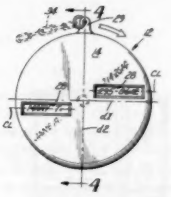
1. A commercial steam generating hand iron comprising a handle, a soleplate providing an expansive flat ironing surface and defining internal chambering for conveying steam through said soleplate to discharge apertures in said flat ironing surface, means for heating said soleplate to selected elevated temperatures, a water supply line for conveying water from a source remote from said iron to said iron, a water valve mounted on said iron and having a valve operating member adjacent said handle, said member being operable by an operator while said operator is holding said iron by said handle, means defining an enclosed elongate, tortuous vaporizing chamber positioned between said heating means and said soleplate, said vaporizing chamber being in flow communication with said chambering in said soleplate at one end of said vaporizing chamber and with said water valve at its other end, conduit means for placing said vaporizing chamber and said water valve in flow communication at said other end when said valve operating member is operated, and means for securing said heating means to said iron and for maintaining said vaporizing chamber between said heating means and said soleplate, thereby to position said heating means both to heat said vaporizing chamber and said soleplate to vaporize water introduced into said vaporizing chamber and to heat the steam introduced into said chambering.

3,852,900

DISC TYPE INDICIA RECORDING AND DISPLAY DEVICE

Joseph J. Svec, Box 206, Rome, Ohio 44085

Filed July 18, 1973, Ser. No. 380,331
Int. Cl. G09f *11/04*
U.S. Cl. 40—70 R **5 Claims**



1. A device for recording information comprising,
a flat disc shaped member having surface means on at least one face thereof for erasably receiving pencil-written indicia thereon,
a cover member overlying at least said one face of said disc member,
means mounting said disc for rotation with respect to the cover member,
said cover member having window means extending therethrough and exposing a portion of said one face of the disc member to permit access of a writing implement to write on said one face of said disc member,
one of said members having a raised annular rim cooperating with the other member for maintaining said cover and face in spaced relationship at the location on the face for receiving indicia,
said raised annular rim further cooperating with the other member to provide detent means formed as an integral part of said cover member and said disc member to releasably secure said cover members and said disc member in any one of a plurality of relatively rotative portions,
whereby different sets of indicia may be written, erased, and rewritten on said disc member, and the disc member rotated to display each set at the window means, said rotation occuring without contact in the region of the indicia to thereby prevent smearing of the written indicia.

3,852,901

DISPLAY STAND

John C. Woodle, Bloomfield Hills, and Dennis J. Smith, Saint Clair Shores, both of Mich., assignors to Arlington Aluminum Company, Detroit, Mich.

Continuation of Ser. No. 42,309, June 1, 1970, abandoned.
This application June 12, 1972, Ser. No. 261,782
Int. Cl. G09f *7/18*
U.S. Cl. 40—125 H **17 Claims**

1. In a display stand,
a plurality of frames
each comprising
top, bottom and side frame members

having inner sides and mitered ends disposed in butting relation at the corners of the frame,

all of said frame members being provided at the rear thereof with means forming

first channels

opening through the inner sides and extending to the ends thereof,

said side and bottom frame members being provided also at the rear thereof with means forming

second channels

opening through the inner sides and extending through the ends thereof and collectively defining a U-shaped recess for accommodating and confining the side and bottom marginal edge portions of an article to be displayed, said side frame members being further provided at the rear thereof and laterally outwardly of said article receiving channels with means forming

third channels

which open laterally and toward the rear of said frame and through the ends of said side frame members;

connecting means

in the first channels of said top, bottom and side frame members of each frame joining and holding said frame members together; and

coupling means

adjustably and removably mounted in the third channels of adjacent frames detachably interconnecting the same, whereby said plurality of frames can be assembled in side-by-side relation or superimposed one upon the other in said display stand and detachably interconnected in said assembly by said coupling means,

the front outer marginal portions of said frame members extending laterally outwardly beyond the portions thereof referred to specifically above,

said front outer marginal portions adapted to be disposed in edgewise butting relation with respect to each other and mutually cooperative to close the spaces between said frames and to conceal the inner sides thereof, the corner connections in said first channels, and the coupling means in said third channels.

3,852,902

PORTABLE SIGN CONSTRUCTION

Alton D. Wheeler, 3940 Fox Meadow, Pasadena, Tex. 77502

Filed Jan. 18, 1973, Ser. No. 324,677

Int. Cl. G09f *21/04*

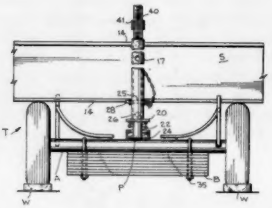
U.S. Cl. 40—129 R **4 Claims**

1. A portable trailer sign adapted to be moved from place to place and temporarily set up as a display sign comprising:

a. an axle having a pair of wheels mounted at its opposite ends for rotation with respect thereto whereby said axle is permitted to rotate relative to said wheels when said wheels are stationary;

b. a vertically extending post rigidly secured to said axle between said wheels;

c. a sign board mounted on said vertically extending post and means mounting said sign board on said post for



movement from a first position perpendicular to said axle to a second position parallel to said axle;

d. means for holding said sign board in said first position;

e. means for holding said sign board in said second position, and

f. ballast weight means depending below said axle and between said wheels to resist rotation of said axle relative to said wheels when said sign board is positioned in said second position.

3,852,903

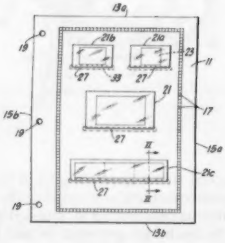
STAMP ALBUM SHEETS

Stephen Nicholas Buco, 345 E. Burrell St., Blairsville, Pa. 15717

Filed July 19, 1973, Ser. No. 380,729

Int. Cl. G09f *1/10*

U.S. Cl. 40—159 **1 Claim**



1. A device for the display of a postage stamp and for the storage of additional similar stamps comprising:

a. A sheet of stiff backing material having parallel end edges and parallel side edges; said sheet having a plurality of spaced apart slots formed through the sheet; each slot extending from a point near one of the side edges and extending to a point near the other side edge and being parallel to said end edges;

b. films of flexible form-sustaining transparent material being doubled over on themselves forming two leaves meeting at a doubled edge; each film passing through each slot with the doubled edge being coincident with the slot so that one leaf is superimposed over a portion of one face of said sheet to form a pocket and the other leaf is superimposed over a portion of the other face of said sheet to form a pocket; said film being depressed transversely along a line that is parallel to the doubled edge at about one-quarter inch from the doubled edge; and,

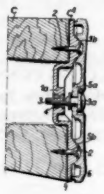
c. a strip of adhesive material extending over and beyond said slot and being coextensive with said sheet and film to lock said film with respect to said sheet.

3,852,904

RIFLE BUTT PLATE UNIT

Georges Drevet, 24 rue Francisque Voytier, Saint Etiene, France

Filed Jan. 8, 1973, Ser. No. 322,007
Claims priority, application France, Jan. 10, 1972, 72.01031
Int. Cl. F41c *23/00*
U.S. Cl. 42—74 **7 Claims**



1. A rifle butt plate unit comprising an intermediate plate, means for attaching the intermediate plate to a rifle butt; at least one butt plate; and fitting means for interchangeably attaching said butt plate to the intermediate plate, said butt plate including a central boss, said fitting means engaging said central boss and securing the butt plate to said intermediate plate, said intermediate plate including a pair of opposed further bosses facing said butt plate, said means for attaching the intermediate plate to the rifle butt comprising fasteners in said further bosses securing the intermediate plate to the butt, said butt plate having recesses corresponding to said further bosses for guidably receiving the same and covering said fasteners.

3,852,905

FISH HOOK EMBEDDING DEVICE

Clay M. Webb, 1005 E. Mariposa St., Phoenix, Ariz. 85014

Filed July 11, 1973, Ser. No. 378,215
Int. Cl. A01k *87/00*
U.S. Cl. 43—15 **1 Claim**

1. A fishhook embedding device comprising:

a. an elongated housing having an inner end and an outer end;

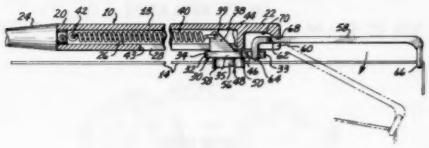
b. a carriage mounted on said housing and longitudinally movable therealong between a retracted position adjacent the inner end of said housing and an extended position adjacent the outer end end of said housing and an extended position adjacent the outer end of said housing;

c. biasing means connected on one end thereof adjacent the inner end of said housing and on the other end thereof to said carriage for urging said carriage toward its retracted position;

d. line engaging means on said carriage to which a fishing line is detachably engagable, said line engaging means comprising,

a pair of spaced apart pins depending downwardly from said carriage and positioned to align with each other transverse to the centerline extending from the rear to the front of said carriage, and

a spring arm attached to each of said pins and extending angularly inwardly rearwardly therefrom so that said



spring arms converge upon each other at a point substantially intermediate the pins and the rear of said carriage, said arms biased toward each other; and

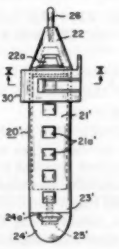
e. a lever mounted on the outer end of said housing to which the fishing line is attachable, said lever pivotably movable from a set to a tripped position in response to pulling of the fishing line when that line is attached thereto, said lever having means thereon for holding said carriage in the extended position when said lever is set and for releasing said carriage when said lever is tripped.

3,852,906

FISHING SINKER HAVING BUOYANCY

Robert C. LaForce, 514 West View Dr., Beaver, Pa. 15009

Filed Feb. 9, 1973, Ser. No. 331,064
Int. Cl. A01k *95/00*
U.S. Cl. 43—43.14 **11 Claims**



1. In an improved fishing line sinker that is buoyant in water, an elongated cylindrical body having closure means on each end thereof to provide a closed-off air space therein, said body having a longitudinally spaced-apart group of latching means therealong, a slide ring operatively mounted on said body and having connector means for a fishing line, said latching means comprising longitudinally spaced-apart pairs

of transversely aligned opposed offset portions on said body, and said slide ring also having latching finger means for position-retention engagement with a selected pair of said offset portions.

3,852,907

FISHING SINKER

Stephen E. Haught, 4919 N. 62nd St., Omaha, Nebr. 68104

Filed Oct. 1, 1973, Ser. No. 402,109

Int. Cl. A01k *95/00*

U.S. Cl. 43—44.9 **7 Claims**

1. A fishing sinker comprising wolframite material, and means for securing said wolframite material to a fishing line, said sinker having a weight of less than 7 ounces, and further comprising: a jacket means surrounding said wolframite material and said jacket means having an opening therethrough for facilitating attachment to a fishing line, said jacket means defining at least a part of said securing means.

3,852,908

PNEUMATIC APPARATUS FOR SIMULTANEOUSLY RAISING A PLURALITY OF LOBSTER TRAPS FROM THE BOTTOM TO THE SURFACE OF A BODY OF WATER

John P. Christopher, Box 19D, RR A-1, Islamorada, Fla. 33036

Filed Mar. 22, 1973, Ser. No. 343,865

Int. Cl. A01k *69/08*

U.S. Cl. 43—102 **2 Claims**

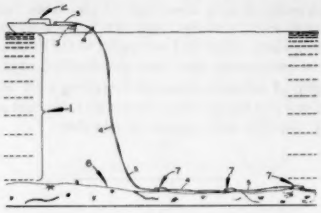
1. A pneumatic apparatus for lobster fishing comprising a plurality of lobster traps having a collapsible float means secured to each said trap,

each of said traps secured in predetermined spaced relation along an outer portion of an air conducting hose which has an air connector secured to each said float means on each of said traps with the hose terminating at the outermost one of said traps,

each of said float means being formed from a collapsible and inflatable elastomer sheet material of uniform thickness and secured in each vertical corner of said trap by removable strap means for providing rapid descent of each of said traps when said float means are collapsed,

a source of compressed air in a fishing boat on the surface of the water,

the foremost end portion of said hose having a predetermined length from the first said trap and the input end thereof being connected to a manually controlled said source of compressed air whereby the plurality of prebaited traps secured along said hose are gravity descended to the bottom surface and following a predetermined trapping interval the traps are substantially raised to the surface of the water by the conduction of compressed air into said input end of said hose and inflating



all of said collapsed float means and whereby all of the said traps will be raised substantially simultaneously to the surface of the water for the convenient extraction of the catch therefrom.

3,852,909

BLOCKS WITH DETACHABLE CAP PLATES HAVING ADDITIONAL MATING CONNECTING MEANS

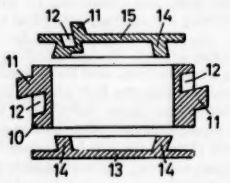
Herbert Viebcke, Wittekindstrasse 7g, Berlin 42, Germany

Filed Dec. 23, 1970, Ser. No. 100,983

Claims priority, application Germany, Dec. 27, 1969, 1965012

Int. Cl. A63h *33/08, 33/10*

U.S. Cl. 46—26 **5 Claims**

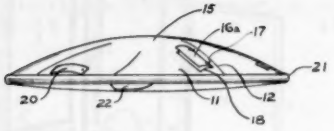


1. An interlocking construction element for use in building vertically and horizontally comprising: a closed frame having a plurality of sides one of which defines a basic length and opposite open ends, at least one said end having its surface lying in a plane; connector means for coacting with similar connector means of a similar element, said connector means including a tongue and groove integrally formed on at least one of the sides of said frame and projecting in planes inclined with respect to said planar surface of said frame; said tongue and groove each having a trapezoidal cross-section, said connector means being arranged in a regular manner on said side to correspond with said basic side length; at least one of the open ends of said frame being covered by a cap plate detachably engageable therewith by means of locking means on one major surface thereof in the form of sloping latch elements frictionally engageable with the interior side surfaces of said open frame, said cap plate having, on its surface opposite said one major surface, connector means for mating with said connector means of said construction element to connect one of said construction elements thereto.

3,852,910
AERIAL TOY

Robert A. Everett, 704 S. 142 East Ave., Tulsa, Okla. 74108

Filed Apr. 21, 1972, Ser. No. 246,238
Int. Cl. A63h 27/00
U.S. Cl. 46—74 D 6 Claims

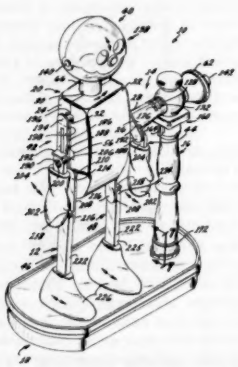


1. A propelled aerial toy comprising a unitary body having an upper and lower surface, the upper surface comprising a plurality of radially extending and downwardly inclined dihedral airfoils, the airfoils extending at angular intervals and radiating from the center of the upper surface, the lower surface being substantially flat and sealed to the upper surface at the perimeter of the body, with a wing flap attached to the trailing edge of at least one of the airfoils.

3,852,911
MANUALLY-MANIPULATED ANIMATED FIGURE TOY

Jurgis Sapkus, Manhattan Beach; J. Lewis Lewis, Pacific Palisades; Stephen W. Piurkowsky, Torrance, and Dale P. Cleveland, Inglewood, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed July 12, 1973, Ser. No. 378,458
Int. Cl. A63h 7/00
U.S. Cl. 46—126 4 Claims



1. A manually-manipulated, animated figure toy comprising:

a puppet assembly including a body, head and limbs;

a hollow, rigid tubular member having a first end secured to said puppet and a second, free end;

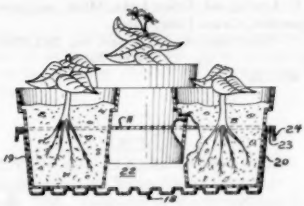
an operating rod rotatably and reciprocably mounted in said tubular member, said operating rod having a first end extending to a position inside said puppet and a second, free end extending to a position beyond said free end of said tubular member for manipulation by a puppet manipulator; and

means connecting said first end of said rod to said head, legs and arms for manipulation by rotating and reciprocating said rod, said head including a fixed lower jaw and a swingable upper jaw, said connecting means including means connected to said upper jaw for swinging said upper jaw away from said fixed jaw when said rod is manipulated.

3,852,912
SHIPPING AND CARRYING CONTAINER FOR POTS

Kenneth Diller, P.O. Box 320, Jordan, Mich.

Filed Sept. 1, 1972, Ser. No. 285,879
Int. Cl. A01g 9/02
U.S. Cl. 47—34.11 3 Claims



1. In a shipping and carrying container for potted plants made of sheet plastic having a thickness of about 0.040 inch or less, the combination comprising: a plurality of rigid pots, such having a sidewall of inverted frusto-conical shape; a flat having a bottom and only four generally flat, upright peripheral sidewalls, each terminating in an upper peripheral edge and being slightly outwardly inclined from the vertical, all of said upper edges lying in a common plane; and a spacer plate comprising a flat sheet of plastic defining a plurality of apertures for slidably receiving said pots, each aperture being sized to snugly engage a pot received therein, said apertures being further sized and arranged such that pots received therein engage all four sidewalls of the flat and a plurality of pots engage and partially rest on the bottom of said flat while maintaining snug peripheral engagement with the edge of their associated spacer apertures to thereby fix the spacer plate and the pots relative to said flat, said spacer plate being dimensioned to extend beyond and rest on the upper peripheral edges of said sidewalls of said flat and to partially transmit the weight of pots received therein to said sidewalls of said flat when said flat is distorted to maintain said upper edges of said sidewall of said flat in said common plane; the inclination of said sidewalls of said flat being approximately the same as the inclination of the sidewall portions of said pots which engage them to provide an extended upright engagement location between the outer surface of said pot sidewall portions and the inner surface of said sidewalls of said flat.

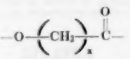
3,852,913
SHAPED BIODEGRADABLE CONTAINERS FROM BIODEGRADABLE THERMOPLASTIC OXYALKANOYL POLYMERS

Robert A. Clendinning, New Providence; James E. Potts, Millington, and Walter D. Niegisch, Watchung, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed July 28, 1972, Ser. No. 275,972
Int. Cl. A01c 1/000; C08g 17/017
U.S. Cl. 47—37 8 Claims

1. An article of manufacture which comprises: (a) a biodegradable container fabricated from about 10 to about 100 weight percent of biodegradable thermoplastic oxyalkanoyl polymer, said polymer having a reduced viscosity value of at least about 0.1 and upwards to about 12 and being further characterized in that at least about 10 weight percent of said

thermoplastic oxyalkanoyl polymer is attributable to recurring oxyalkanoyl units of the formula



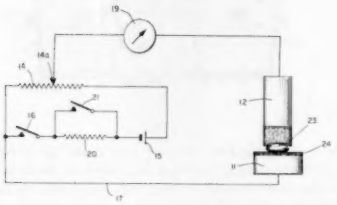
wherein x is an integer having a value of 2 to 7, with the proviso that x does not equal 3; and (b) a medium to germinate and grow seeds or seedlings in said container.

3,852,914

METHOD FOR DETERMINING THE VIABILITY OF SEEDS PRIOR TO GERMINATION

William C. Levengood, Grass Lake, Mich., assignor to Sensors, Incorporated, Grass Lake, Mich.

Filed Sept. 1, 1972, Ser. No. 285,930
Int. Cl. A01b *79/00*
U.S. Cl. 47—58 **10 Claims**



1. A method for determining the viability of seeds prior to germination comprising:

a. moistening seeds from a dry state for a period of time and at a temperature sufficient to cause the seeds to pass from the dry state into at least the first phase of their pre-germination cycle but without initiating the last phase of said cycle,

b. applying an electrical potential to each of said seeds to cause an electrical current to pass therethrough,

c. measuring the electrical current passing through each of said seeds, and

d. separating the seeds into groups according to their measured values of electrical current as a measure of their viability wherein the viability decreases with the increase in the measured values of electrical current, and wherein the maximum measured values of electrical current in the steady state do not exceed about 40 microamperes at an applied potential of 1.5 volts.

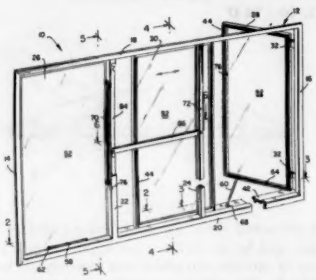
3,852,915

WINDOW ASSEMBLY

Louis L. Schacht, 205 E. 63rd St., New York, N.Y. 10021

Filed May 24, 1974, Ser. No. 473,011
Int. Cl. E06b *3/32*
U.S. Cl. 49—143 **10 Claims**

1. A plural closure window assembly for a wall opening adapted for providing ventilation and access to the weather side of the window assembly, comprising a rectangular frame member securable along a margin of the wall opening and including at least two sash members, a first sash member being mounted for lateral movement within the frame member, a second sash member being pivotally attached along one vertical side of the frame member, sealing means for effecting a vapor and thermal barrier at the interface between the sash members and the frame member, the second sash being swingable from an initially closed position in a substantially coincident vertical plane with the first sash member to an outwardly open position, the first sash member being selectively displaceable within the vertical plane into the space previously occupied by the closed second sash member to thereby define an open span for providing access exteriorly of the wall and further including safety means for forming a protective barrier



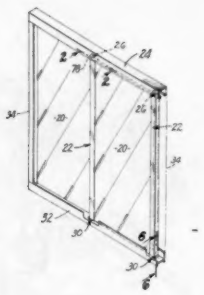
across the open span, said safety means being deployable upon movement of the second sash member.

3,852,916

SLIDING DOOR ASSEMBLY

Jordan M. Laby, Sherman Oaks, Calif., assignor to American Shower Door Co., Inc., Hollywood, Calif.

Filed Dec. 11, 1972, Ser. No. 314,226
Int. Cl. E05d *13/02*
U.S. Cl. 49—409 **12 Claims**



1. A sliding door assembly comprising:

an overhead track;

a glass panel having opposed vertical edges the portions of said panel adjacent said edges having opposed flat surfaces;

supporting means for said panel comprising an elongated channel shaped gripping means extending along and resiliently frictionally embracing only each of said vertical edges along the full length thereof, each of said gripping means having a rearward vertical wall and forwardly extending and converging flange portions extending into firm frictional engagement with respective opposed flat surfaces, each of said flange portions having outwardly flared forward edge portions; and

a hanger means at the upper end of each gripping means guiding said door assembly along said track, said flange portions frictionally gripping said opposed flat surfaces with sufficient force to provide the sole support for said glass panel.

3,852,917

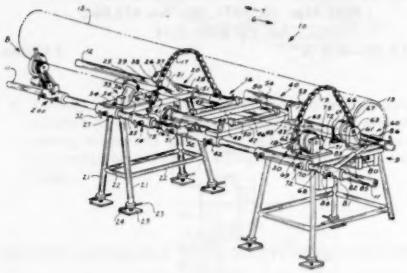
WORK SUPPORT APPARATUS WITH PIPE GROOVING TOOL

Roy P. McKown, 9229 Robin Ln., Indianapolis, Ind. 46240

Division of Ser. No. 174,021, Aug. 23, 1971, Pat. No. 3,756,101, which is a continuation-in-part of Ser. No. 64,530, Aug. 17, 1970, abandoned. This application May 11, 1973, Ser. No. 359,410

Int. Cl. B24b *19/02*, *41/06*; B23b *3/36*

U.S. Cl. 51—5 B 4 Claims



1. A work support apparatus for supporting and rotating different sizes of pipe comprising:

an idler stand including a first main frame and first and second bearings in spaced relationship to each other mounted on top of said main frame, said first and second bearings being adjustable apart to rotatably receive and support said pipe, said main frame further including opposite sides and a first pair of sleeves mounted to said sides and extending parallel with said pipe;

a power stand including a second main frame and first and second wheels in adjustable spaced relationship to each other rotatably mounted on top of said second main frame with at least one wheel being rotatably driven, said wheels being located relative to said bearings to support said pipe in a horizontal position, said second main frame further including opposite sides with a second pair of sleeves mounted to said sides of said second main frame and extending parallel with said pipe;

first and second straight and parallel rods extending through said first pair of sleeves and said second pair of sleeves aligning said idler stand with said power stand;

a third main frame located between said idler stand and said power stand and having sleeves mounted on said third main frame through which said first and second rods extend, said third main frame having at least one roller rotatably mounted on said third main frame with said roller being vertically immovable and located beneath said pipe so as to not contact said pipe when said pipe extends horizontally being supported by said wheels and said bearings, said roller supporting said pipe as said pipe is being placed onto and removed from the work support apparatus.

3,852,918

GAS-ABRASIVE MIXING AND FEEDING DEVICE

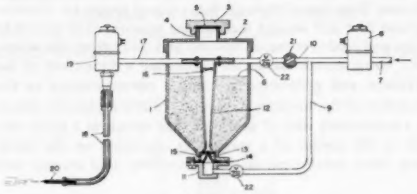
Robert B. Black, 2450 Morgan St., Corpus Christi, Tex. 278405

Filed Mar. 29, 1972, Ser. No. 239,211

Int. Cl. B24c *7/00*

U.S. Cl. 51—12 9 Claims

1. Equipment for use in mixing abrasive particles with a compressed gas, comprising a reservoir for abrasive particles, a venturi tube in the reservoir, the tube having its inlet end portion apertured to provide communication with the interior of the reservoir, an abrasive delivery connection extended from the discharge end of the venturi tube, the discharge end portion of the venturi tube being apertured to provide communication with the interior of the reservoir, and means for causing abrasive particles to circulate through the venturi tube and the reservoir and to deliver abrasive particles through said



delivery connection comprising a compressed gas supply line and a nozzle for delivering a stream of compressed gas from said line into the throat of the venturi tube through the inlet end of the tube.

3,852,919

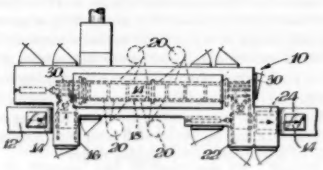
CONTINUOUS CLEANING APPARATUS

Davis Lee Baughman, and James Hugh Carpenter, Jr., both of Hagerstown, Md., assignors to Carborundum Company, Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 553,183, May 26, 1966. This application Nov. 8, 1966, Ser. No. 592,799

Int. Cl. B24c *3/30*, *3/08*, *9/00*

U.S. Cl. 51—15 8 Claims



1. A continuous cleaning apparatus comprising an elongated barrel, said barrel having an open feed end and an open discharge end to permit the axial flow of parts therethrough, feed means for delivering parts to said feed end one at a time, discharge means for receiving parts from said discharge end one at a time, cleaning means positioned along said barrel for cleaning the parts flowing therethrough, said barrel being of skeletal form with open portions in its periphery to permit cleaning media from said cleaning means to enter said barrel, rotation means connected to continuously rotate said barrel to cause the parts therein to rotate as they are cleaned, and pickup means on said feed end for removing parts from said feed means and disposing the parts in said barrel.

3,852,920

MACHINE TOOL HAVING REST APPARATUS

Masami Takida, Kariya; Isao Suzuki, Okazaki; Masahisa Osuga, Gamagori, and Takeshi Ota, Aichi, all of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed Nov. 19, 1973, Ser. No. 416,768

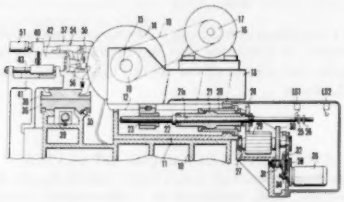
Claims priority, application Japan, Nov. 29, 1972, 47-119690

Int. Cl. B24b *49/04*

U.S. Cl. 51—105 R 10 Claims

1. A machine tool having rest means comprising a bed; workpiece supporting means mounted on said bed; drive means for rotating a workpiece supported by said workpiece supporting means; tool slide means carrying at least one machining tool serving to machine the workpiece; first feed

means for moving said tool slide means toward and away from the workpiece; rest apparatus located on the opposite side of the workpiece from the tool slide and having an engaging finger operative to support the workpiece during machining thereof; second feed means for moving said rest means toward and away from the workpiece; first control means for controlling said first and second feed means to move said tool slide means and said rest means toward and away from the workpiece; sizing device means for measuring a dimension of the workpiece and generating an output corresponding to the dimension of the workpiece; second control means for effecting a momentary stop of said tool slide means at a given moment in the course of a machining operation on the workpiece; third control means for controlling said second feed



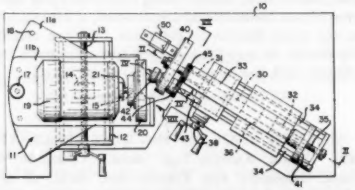
means so as to move said engaging means in a direction to the workpiece during said momentary stop through a predetermined stroke in cooperation with said sizing device means, whereby the workpiece is forcedly shifted toward said machining tool by said rest apparatus, said workpiece continuing to be machined while the tool slide means is at its momentary stop; and fourth control means for controlling a movement of said engaging finger in a direction to the workpiece synchronously with a movement of said tool slide means at a same speed with each other when said forcedly shifting movement of said engaging means and the workpiece has been completed by said third control means, whereby the machining operation on the workpiece can be performed with high accuracy independently of a wear of said engaging finger.

3,852,921

TWIST DRILL SHARPENERS

Jack C. Craig, Wexford, Pa., and Robert B. Henry, Box 188, Wexford, Pa. 15090, assignors to Henry, by said Craig

Filed Nov. 12, 1970, Ser. No. 88,807
Int. Cl. B24b *3/26*
U.S. Cl. 51—133 **1 Claim**



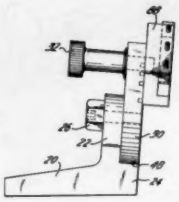
1. A drill sharpening and pointing apparatus comprising a circular grinding disc, means for rotating said disc, a shaft mounted for rotation adjacent said grinding disc on an axis transverse to the axis of said grinding disc, a rotatable chuck means mounted on and radially spaced from said shaft for holding a twist drill for sharpening with the axis of said drill parallel to the axis of said shaft, said chuck means being mounted for rotation in a tool disc mounted on one end of said shaft for rotation with said shaft, indexing means adjacent the tool disc for indexing a twist drill in the chuck for proper sharpening, said index means including a post movable between a horizontal and vertical position, said post being held by a stop in the vertical position and means acting on said chuck means to rotate said chuck means through a selected angle less than 360° each time the tool disc rotates 360° and means for rotating said shaft.

3,852,922

FIXTURES FOR HOLDING A TOOL SUBJECT TO GRINDING

Rocco F. Grieco, 14 Wittkop Pl., Millburn, N.J. 07041

Filed Mar. 14, 1974, Ser. No. 451,062
Int. Cl. B24b *3/34*
U.S. Cl. 51—218 A **2 Claims**



1. A fixture to support a cutting tool for grinding comprising a base and a carrier block extending upwardly therefrom, a positioning block mounted on said carrier block, said positioning block having a flat tool holder receiving surface with a hole through said tool holder receiving surface for rotatably supporting a tool holder, indexing holes on opposite sides of said tool holder hole, a first zeroing hole positioned at a point spaced from said tool holder hole, said tool holder having a center line being formed perpendicular to a line between said zeroing hole and said tool holder hole, said positioning holes including a pair of holes positioned slightly above the center line to utilize in grinding square thread cutters, tool holder means for holding tool steel subject to grinding rotatably positioned in said tool holder hole and adapted to be removably positioned with one end of said tool holder in one of said positioning holes said base and carrier block being integral with one another, said carrier block tilting slightly from the vertical and said base extending outward under said positioning block and forming a horizontal ledge, said positioning block lowermost portion, when in a vertical position, touching said horizontal ledge, said positioning block having along the bottom thereof, when in said vertical position, a semicircular portion with a measuring scale thereon, the other portion of said positioning block having flat side surfaces, said tool holder hole being in said other portion of said positioning block, said positioning block being rotatably mounted to said carrier block at the center of said semicircular portion to a position wherein one of said flat side surfaces abut said horizontal ledge.

3,852,923

MATERIAL REMOVING BIT

Charles Henry Hess, 347 S. Wake Forest, Ventura, Calif. 93003

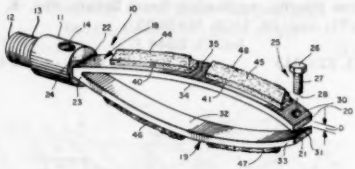
Filed Oct. 9, 1973, Ser. No. 404,413
Int. Cl. B24b *5/40*
U.S. Cl. 51—352 **8 Claims**

1. A rotatable material removing bit, comprising:

a. a mounting collar having a neck constructed for connection to a rotating drill rod;

b. at least two elongated and outwardly bowed cutting blades constructed from metal leaf spring material, having a set of inner cutting blade ends secured in cantilevered relationship to the mounting collar and an outer set of cutting blade ends spaced from one another;

c. at least one mounting pad secured to the external or convex face of each cutting blade, carrying an abrading bar constructed from composite rod material; and,



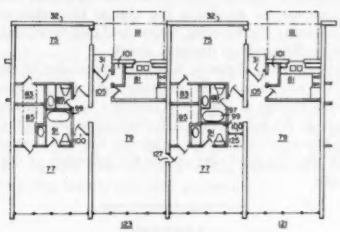
d. cutting pressure regulating means including a spacing adjustment aperture formed through an outer end of one cutting blade with a set screw positioned in the aperture for engagement with a striking area of the other cutting blade.

3,852,924

HOUSING ASSEMBLY WITH CONVERTIBLE HOUSING UNITS

Nathan S. Levenson, 1365 Cordova Rd., Pittsburgh, Pa. 15206

Division of Ser. No. 104,982, Jan. 8, 1971, Pat. No. 3,724,147.
This application Nov. 13, 1972, Ser. No. 305,700
Int. Cl. E04h *1/02*
U.S. Cl. 52—79 **5 Claims**



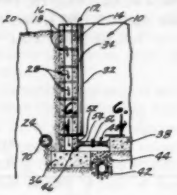
1. A housing assembly including a plurality of substantially like side-by-side modular housing units, each unit including a living-dining room and kitchen and a pair of bedrooms parallel to said living-dining room and kitchen, the living-dining room and kitchen of a first unit adjacent to a second unit being contiguous to the bedrooms of said second unit, with one bedroom of said second unit juxtaposed to said kitchen of said first unit and the second bedroom of said second unit juxtaposed to the living-dining room of said first unit, there being a wall between the living-dining room and kitchen of said first unit and said bedrooms of said second unit in which a passage may be selectively provided between the living-dining room of said first unit and said second bedroom, the bedrooms of each unit having therebetween an enclosure extending into each bedroom and having back-to-back powder-room facilities, a facility extending into and serving each bedroom and a bathtub between said powder-room facilities, and relocatable wall means within said enclosure selectively relocatable on the side of said bathtub adjacent either of said powder-room facilities, whereby two adjacent modules may be selectively either two two-bedroom apartments or a one one-bedroom apartment, including said one bedroom of said second unit, and one three-bedroom apartment including said second bedroom of said second unit, with said relocatable wall means positioned so that said bathtub is in the bathroom of said one bedroom of said second unit.

3,852,925

METHOD AND MEANS FOR MAINTAINING A DRY BASEMENT

Joseph F. Gazzo, 1303 McKinley Ave., Des Moines, Iowa 50315

Filed June 25, 1973, Ser. No. 373,153
Int. Cl. E02d *31/02*
U.S. Cl. 52—169 **10 Claims**



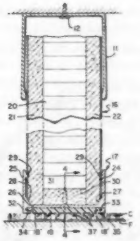
1. A basement drainage system comprising,
a basement wall formed from hollow blocks extending along a floor,
a drain ditch extending along said wall under said floor, and said wall blocks having drain openings for communication with said drain ditch,
said floor being spaced from said wall to provide a passageway between said floor and wall for communication between said drain openings and said drain ditch, said passageway being filled with granular material,
a plurality of spaced apart braces extend across said passageway in said granular material with the inner ends of said braces being embedded in said floor thereby counteracting outside pressures on said wall and maintaining said wall stationary.

3,852,926

MODULAR WALL CONSTRUCTION

William G. Papsco, 145 Willowbrook Dr., Portola Valley, Calif. 94025

Division of Ser. No. 151,053, June 8, 1971, Pat. No. 3,753,328.
This application Mar. 28, 1973, Ser. No. 345,494
Int. Cl. E04b *2/82*
U.S. Cl. 52—241 **4 Claims**



1. In a modular wall for a room with a floor, a module comprising
a panel having side edges,
a floor rail secured in fixed relationship to the underside of said panel,
a gripper plate disposed under and interlocked with said floor rail and adapted to be frictionally coupled to said floor,
said plate having a longitudinally slidable engagement with said rail and having a length substantially less than the length of said rail whereby the module is movable

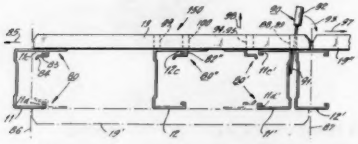
longitudinally relative to said plate and floor, and means for limiting relative movement of the plate and rail.

3,852,927

APPARATUS FOR MOUNTING WALLBOARD

Herbert L. Birum, Jr., Pleasant Valley Rd., Titusville, N.J. 08560

Division of Ser. No. 141,627, May 10, 1971, abandoned. This application Apr. 17, 1973, Ser. No. 351,959
Int. Cl. E04b 2/82
U.S. Cl. 52—241 6 Claims



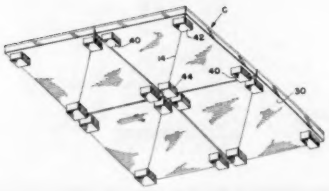
1. An interior movable partition system for a building structure comprising at least one panel;
   a plurality of spaced parallel vertically aligned studs of substantially C-shaped cross section defined by a central portion and a pair of outwardly extending arms;
   clip means being secured to the mounting face of said panel along first and second marginal edges thereof;
   each of said clip means having a resilient panel mounting portion integrally joined to a stud embracing portion for snap-fittingly engaging the free end of an arm of an associated one of said studs for urging the panel toward said studs.

3,852,928

ELEVATED FLOORING SYSTEM AND PANEL THEREFOR

Richard L. Raith, Cleveland, Ohio, assignor to Hauserman, Inc., Cleveland, Ohio

Filed June 13, 1973, Ser. No. 369,473
Int. Cl. E04b 5/48; E04c 2/52
U.S. Cl. 52—263 16 Claims



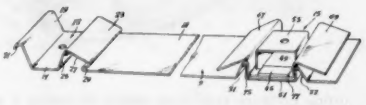
1. A substantially rectangular panel hinged across diagonally opposite corners, and including as a part thereof elevating supports extending downwardly from said opposite corners and the remaining corners on said panel, said panel being divided into triangular panels along a hinge line, and said elevating supports at said opposite corners being attached to only one of said triangular panels adjacent said hinge line.

3,852,929

SHEET FIXING DEVICE

William Cookson, Fareham, England, assignor to Cookson Sheet Metal Developments Limited, Southampton, England

Filed Oct. 5, 1972, Ser. No. 295,224
Claims priority, application Great Britain, Oct. 8, 1971, 46896/71; Aug. 16, 1972, 38150/72
Int. Cl. E04d 3/36
U.S. Cl. 52—543 4 Claims



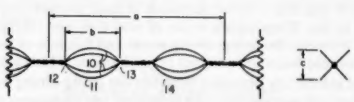
1. Fixing device for cladding sheets, each of which has a male rib at one end, a female rib at the other end and at least one intermediate hollow rib with internal pockets, the device being securable to a structural member and having,
   a. means for locating the device with respect to a male rib of a first one of the sheets, the locating means being engageable with the said male rib so that the fixing device and the said first sheet are restrained from a relative lateral movement,
   b. a snap-action fastening clip spaced from the locating means including arms having free ends for engagement with the internal pockets of an intermediate rib of a second one of the sheets, which second sheet is to be secured to the structural member adjacent the first sheet,
   c. a spacing member having the locating means at one end and means for receiving the clip at the other end and maintaining the locating means and clip receiving means at a predetermined distance apart,
   d. said clip being separate from the remainder of the fixing device and having an aperture, and the clip-receiving means having at least one member to pass through the aperture for subsequent deformation to clamp the clip to the clip-receiving means, whereby the clip is engageable with the clip-receiving means for assembly of the device in situ.

3,852,930

TRIDIMENSIONAL FIBER REINFORCEMENT OF PORTLAND CEMENT CONCRETE MATRICES

Antoine E. Naaman, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Aug. 24, 1972, Ser. No. 283,438
Int. Cl. E04c 5/01
U.S. Cl. 52—664 6 Claims

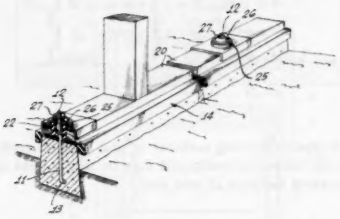


1. A reinforcing fiber for a concrete matrix comprising
   a plurality of three or more steel wires,
   said wires forming a skeletal outline of a volumetric enclosure,
   said wires being substantially equally spaced from each other on said enclosure,
   said wires being joined together at opposite ends of the enclosure,
   an additional steel wire through the center of said volumetric enclosure, joining the other skeletal wires at the ends of the enclosures.

3,852,931
RESILIENT FOUNDATION CONNECTION

Charles F. Morse, 149 N. Los Palmas, Los Angeles, Calif. 90004, and Donald G. Seal, 1585 S. Coast Highway, Laguna Beach, Calif. 92651

Filed May 1, 1972, Ser. No. 249,306
Int. Cl. E04b *1/98*; **E02d** *31/08*
U.S. Cl. 52—293 **3 Claims**

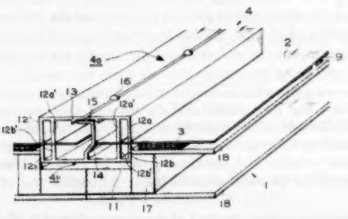


1. A resilient supporting connection for a structure which includes:
- a rigid support;
- a resilient, vibration-insulating cushion on said support;
- a sill forming a part of said structure, bearing against said cushion and supported thereby;
- unitary connecting means rigidly attached at one end to said support, said connecting means extending through said resilient vibration insulating cushion and through said sill to hold said sill and support together; and
- resilient attaching means including resilient annular vibration-insulating means securing said other end of said connecting means to said sill, said annular means surrounding said connecting means, bearing against said sill and spacing said connecting means from said sill, whereby said sill is vibration-insulated from said support and from said connecting means, said annular means comprising a flanged cylindrical grommet means, said flange overlying and being urged by said connecting means against said sill, and spring means between said connecting means and said grommet.

3,852,932
METAL ROOF STRUCTURE

Shigeki Mukoyama, Tokyo, and Shigeru Obara, Yokohama, both of Japan, assignors to Nippon Light Metal Company, Tokyo, Japan

Filed Oct. 12, 1972, Ser. No. 296,835
Claims priority, application Japan, Oct. 14, 1971, 46-81139; Oct. 14, 1971, 46-81140; Mar. 9, 1972, 47-28696; Feb. 7, 1972, 47-15939; Feb. 7, 1972, 47-15940
Int. Cl. E04b *7/00*
U.S. Cl. 52—495 **2 Claims**

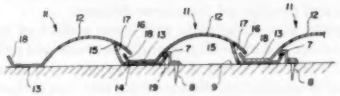


1. A metal roofing structure for covering at least a portion of an opening in a building, said structure comprising in combination:
- a roof board layer disposed so as to extend over said opening in a covering relationship therewith:
- a plurality of adhesive strips disposed at spaced intervals along said layer, said strips each including a core portion having adhesive material exposed on at least two opposite sides thereof with one of said sides in adhesive gripping engagement with said layer;
- a metal roofing plate received over said layer and retained in a desired position thereon by the adhesive material on the other of said sides, said cores of said adhesive strips maintaining said layer and said roofing plate in a desired spaced apart relationship from each other with an air layer therebetween;
- a preformed metal member comprised of interfitting upper and lower portions for connecting two of said roofing plates disposed in a generally edge to edge coplanar relationship with each other, said upper and lower portions each including flanges, said preformed metal member lower portion having a pair of flanges disposed at each side thereof, the inside flange of each pair of flanges extending higher than its adjacent outside flange, and
- said performed metal member upper portion extending longitudinally along the top of said two roofing plates and overlapping said edge thereof, said edges of said roofing plates being sandwiched between juxtaposed edges of opposed flanges of said upper and lower portions whereby the overlapped edges of said roofing plates are slightly raised.

3,852,933
ROOF PANEL

Ralph Guzzo, R.D. No. 1, Amity, Pa. 15311

Filed Jan. 15, 1973, Ser. No. 323,800
Int. Cl. E04d *1/06*, *3/365*
U.S. Cl. 52—533 **1 Claim**



1. A plurality of roof panels having interlocked sides, each panel comprising an outwardly projecting, substantially convex, central panel portion terminating in integral, substantially concave, trough shaped, flat bottomed side portions, a clip attaching the extremity of said side portion to a supporting framework, an integral overhanging portion extending at an acute angle from where one of said trough shaped side portions joins said convex, central panel portion so as to overhang, while spaced from and without contacting, the extremity of a trough shaped side portion of an adjoining panel after such adjoining panel is tilted into position, to effect nesting of opposite trough shaped side portions without impairing relative sliding movement therebetween, there being no connection between said nested trough shaped portions or between said extremity and said overhanging portions, the upper trough shaped nested side portion being slightly shorter than the bottom one in order to permit relative movement therebetween as the result of expansion or contraction from ambient temperature changes, and a clip fastening the extremity of the bottom nesting side portion to said framework.

3,852,934
INTERLOCKING SHINGLE ARRANGEMENT

William Joseph Kirkhuff, 18414 S. Wilton Pl., Torrance, Calif. 90504

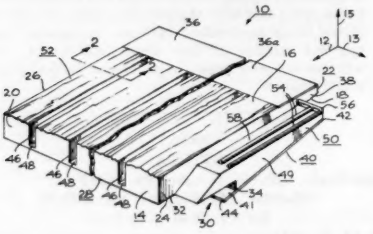
Filed Jan. 12, 1973, Ser. No. 323,278
Int. Cl. E04d *1/18*, *1/28*
U.S. Cl. 52—539 **17 Claims**

1. An interlocking simulated shingle arrangement for instal-

lation on roofs, walls and other structures and comprising, in combination:

a body member having an upper surface, a lower surface transversely spaced from said upper surface, a forward surface, a rear surface longitudinally spaced from said forward surface, a pair of side surfaces laterally spaced from each other, and first walls defining a channel, and said first walls having a top portion transversely spaced from said upper surface and extending a first preselected longitudinal distance from said forward surface towards said rear surface, and said first walls having a base portion extending from said lower surface a second preselected transverse distance towards said upper surface;

a top plate coupled to said upper surface on a rear portion thereof adjacent said rear surface and extending laterally between said pair of side surfaces and extending longitudinally substantially said first preselected longitudinal distance to leave exposed said upper surface of said body member between said forward surface thereof and said top plate, and a combined transverse thickness of said rear portion of said body member at said rear surface



thereof and said top plate substantially equal to said second preselected transverse distance;

a bottom plate coupled to said lower surface of said body member and extending laterally between said pair of side surfaces and having a back edge spaced a third preselected longitudinal distance from said rear surface of said body member and having a front portion extending from said base portion of said first walls of said body member a fourth preselected longitudinal distance therefrom towards said front surface of said body member and said front portion underlying and transversely spaced from said top portion of said first walls;

whereby said top plate and said rear portion of said body member of a first simulated shingle in a first course of simulated shingles is positionable in said channel of a second simulated shingle in an adjacent course of simulated shingles, and said front portion of said bottom plate of the second simulated shingle underlies the lower surface of the rear portion of the first shingle, and said bottom plate of said first and said second simulated shingles are in substantially continuous contact with the structure upon which the simulated shingles are installed.

3,852,935

MAGNETIC WALL STUD

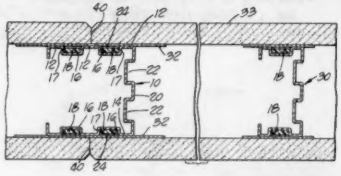
Harold R. Jones, 1267 Montevideo Ave., Placentia, Calif. 92670

Filed Sept. 22, 1972, Ser. No. 291,332

Int. Cl. E04b *2/30*

U.S. Cl. 52—730 **9 Claims**

1. A stud for supporting lengths of wallboard of the type which are magnetically attractive, said stud being composed of a magnetically conductive material and having oppositely disposed elongated support surfaces joined together by a web, each of said support surfaces having a longitudinal channel therein, a quantity of permanent magnetic material positioned in each of said channels, said magnetic material being recessed therein from said support surfaces thereby defining air gaps between the magnetic material and said support surfaces, said magnetic material being coupled in flux conducting rela-



tionship to the supporting surfaces of said stud, whereby said magnetically attractive wallboard may be firmly held against said supporting surfaces of said stud.

3,852,936

METHOD OF AND A MACHINE FOR FORMING AND FILLING TRAYS WITH ARTICLES

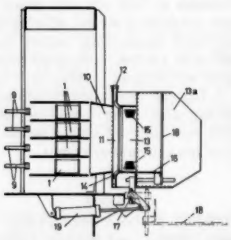
Ian Mayor Wilson, Old Coulsdon, and Eric William Hamp, Thornton Heath, both of England, assignors to Arcall Limited, Hackbridge, Surrey, England

Filed Aug. 21, 1972, Ser. No. 282,387

Claims priority, application Great Britain, Aug. 20, 1971, 39170/71

Int. Cl. B65b *5/02, 21/06*

U.S. Cl. 53—26 **12 Claims**



1. Apparatus for loading articles in a tray of the kind formed from a prepared blank of cardboard or other suitable sheet material having marginal portions which are adapted to be folded to form a confining wall around a base of the tray, in which the apparatus comprises a hollow die of internal dimensions corresponding to the dimensions of a finished loaded tray and having an inlet mouth and an outlet end, means for assembling and positioning articles into sets of articles arranged in a pre-determined pattern outside said die and opposite the mouth of the die, means for receiving and locating a tray blank adjacent the mouth of the die, means for contacting the said articles on their sides remote from the mouth of the die and moving the articles in said pre-determined pattern into contact with the tray blank and continuing said movement with the underside of the tray exposed, through the die to fold the marginal portions of the tray to form said confining wall around said articles and continuing said movement through the die until the tray and articles leave the outlet end of the die; and

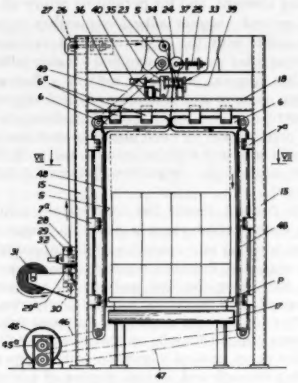
a rectangular hollow channel of progressively reduced crossectional area with its sides around the mouth of the die, the articles being moved through said channel before contacting the tray blank, to urge the articles into close contact before entering the die.

3,852,937

SHRINK-WRAPPING METHOD AND APPARATUS

Michael P. Bitsura, Pittsburgh; Robert Brevko, Bridgeville, and Merle A. Palmer, Pittsburgh, all of Pa., assignors to Auburn Engineering, Inc., Clairton, Pa.

Filed Aug. 6, 1968, Ser. No. 750,497
Int. Cl. B65b *43/30*, *53/02*
U.S. Cl. 53—29 18 Claims



1. The steps in the method of shrink-wrapping a polyethylene film about a bulky load on a supporting base wherein the polyethylene is a roll of tubular film flattened down upon itself, which comprises:

a. mechanically feeding the flattened tubular sheet from the supply roll downward toward and about a load to be wrapped positioned beneath it;

b. engaging the two opposed surfaces of the leading end of the flattened tubular sheet at a level above the load to be wrapped and below the level at which the mechanical feeding of the film occurs and opening it horizontally into a four-sided configuration by oppositely moving sheet-gripping means, mechanically feeding the flattened tubular sheet from the supply roll downwardly toward the load while the open end of the tube is so engaged and guiding it downwardly around the load whereby the gripping means is required to apply only sufficient tension to hold the film open and guide it downwardly around the load,

c. terminating the downward feed of the sheet when the leading edge of the sheet is below the supporting base of the load,

d. severing the flattened tubular sheet after the leading edge has progressed downwardly a predetermined distance back from the leading edge determined by the height of the load and at such a place so that when the leading edge is below the supporting base the severed edge will be at a level above the top of the load, and

e. thereafter moving the load about which the film has been so placed through a heated environment to shrink the film about the load.

3,852,938

ARTICLE PACKING APPARATUS AND METHOD

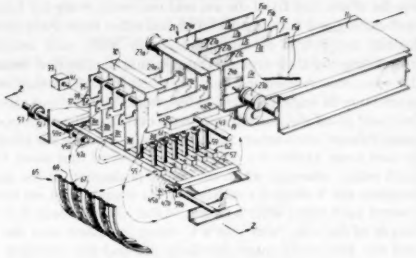
William R. Graff, Lynchburg, Va., assignor to Alliance Industrial Corporation, Lynchburg, Va.

Filed May 18, 1973, Ser. No. 361,768
Int. Cl. B65b *5/08*, *35/56*
U.S. Cl. 53—35 9 Claims

5. A method of packing containers comprising the steps of: depositing upturned containers on gripping members mounted on a flexible endless transporting means which is, in turn, mounted on at least two wheels;

activating said gripping members so that said gripping members grip said containers;

driving said flexible endless transporting means so that said gripping members gripping said containers travel around one of said wheels and thereby invert said gripped containers to downturned positions;



moving a carton so as to receive said downturned containers; and,

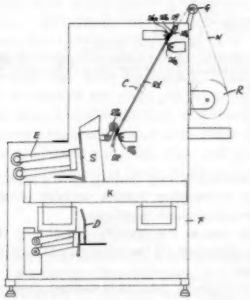
deactivating said gripping members thereby leaving said containers in said cartons in said downturned positions.

3,852,939

APPARATUS FOR AUTOMATICALLY BINDING THE OPENING IN THE AUTOMATIC PACKER

Hirosato Yoshi, Osaka, Japan, assignor to Kabushiki Kaisha Sanwa Jidoki Seisakusho, Osaka, Japan

Filed Sept. 14, 1972, Ser. No. 288,982
Claims priority, application Japan, Sept. 17, 1971, 46-85372
Int. Cl. B65b *9/10*
U.S. Cl. 53—138 A 5 Claims



1. An apparatus for automatically binding the opening in a net being packed in an automatic packer, said apparatus comprising two main bodies, each having a guide plate projecting therefrom toward the other main body and each guide plate having a V-shaped cut therein on the end toward the other main body, said main bodies being slidably mounted in said apparatus for movement toward and away from each other, one of said main bodies having at least one fixed die thereon having a recess therein for receiving the free ends of a U-shaped length of flat wire for bending the ends to crimp the length of flat wire around the net being packed, and said one main body further having a cutting blade thereon movable toward and away from said other die for cutting the net being packed, flat wire feed means on said apparatus for feeding flat wire from a supply of flat wire, a movable die means on said other main body having a cutting and bending die movably mounted on said other main body and receiving the flat wire, a protruding rod movable through said cutting and bending

die, and stop members engageable with said cutting and bending die for holding it fixed on said other main body, said cutting and bending die moving with said other main body for cutting the flat wire which has been supplied and then bending it in a U-shape, engagement means on said one main body engaging said stop members for disengaging the stop members from said cutting and bending die when said cutting and bending die abuts said fixed die on said one main body for freeing said cutting and bending die from said other main body during further movement of said other main body, said movable protruding rod then moving through said cutting and bending die when said cutting and bending die is freed from said other main body to engage said bent length of flat wire and move it into said fixed die on said one main body as said main bodies move toward each other, and main body drive means coupled to said main bodies for driving them toward and away from each other, whereby when the net is positioned in the space between the V-shaped notches and the main bodies are driven toward each other after a length of flat wire has been fed, the length of flat wire bent into a U-shape is passed over the net and the free ends enter the fixed die and the movable die drives the bent length of flat wire into the fixed die to crimp the flat wire tightly around the net.

3,852,940

AUTOMATIC CAP SEALING DEVICE

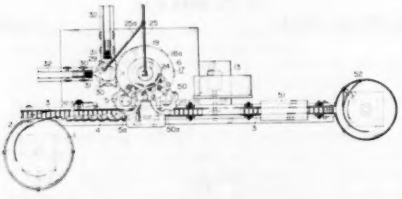
Yoshikuni Kinoshita, Tokyo, Japan, assignor to Ryohsei Plastic Industry Co., Ltd., Tokyo, Japan

Filed May 17, 1973, Ser. No. 361,441

Claims priority, application Japan, May 30, 1972, 47-053576

Int. Cl. B67b *5/00;* **B65b** *7/28*

U.S. Cl. 53—292 **2 Claims**



1. In an automatic cap sealing device which includes:

means for conveying bottles serially along a path which includes an arcuate portion;

dispensing means for serially dispensing flattened tubular sealing elements of thermally contractile synthetic resin material;

means for applying a tubular sealing element to the mouth portion of each bottle as each bottle passes through said arcuate portion of said path;

means for serially withdrawing flattened tubular sealing elements from the dispensing means and for transfering the withdrawn elements to said applying means,

the improvement wherein said applying means comprises:

a rotary member having a plurality of angularly spaced first vacuum adhesion fingers positioned on said rotary member to be successively carried into contact with flattened tubular sealing elements withdrawn from the dispensing means by said serially withdrawing means; vacuum conduit means successively communicating with each first vacuum adhesion finger to cause that finger to grip one outer side of the flattened tubular sealing element when carried into contact therewith; the first vacuum adhesion members also being positioned to be successively carried by rotation of said rotary member, after each has successively gripped a flattened tubular sealing element, into vertical alignment above a respective bottle in said arcuate portion of said path;

a second vacuum adhesion finger opposingly paired with each first vacuum adhesion finger and carried by said rotary member;

cam means timed with rotation of the rotary member for successively displacing each second vacuum adhesion finger from confronting opposition with the respective first vacuum adhesion member while the respective first vacuum adhesion member is being carried into contact with and gripping one outer side of a flattened tubular sealing element, and for permitting return of the respective second vacuum adhesion member to confronting opposition with the respective first vacuum adhesion member after the respective first vacuum adhesion member has gripped one outer side of a flattened tubular sealing element and is nearing vertical alignment with a respective bottle passing through said arcuate portion of said path; means for then urging each respective second vacuum adhesion member into contact with the opposite outer side of the respective flattened tubular sealing element;

vacuum conduit means for successively communicating with each second vacuum adhesion finger when each finger is urged into contact with the opposite outer side of a respective flattened tubular sealing element;

means for urging the first and second vacuum adhesion fingers of each successive pair relatively away from one another to open the respective flattened tubular sealing element gripped thereby as that tubular sealing element further nears vertical alignment with a respective bottle passing through said arcuate portion of said path;

and downward pushing means positioned to push each respective opened tubular sealing element down onto the mouth portion of the respective bottle when that opened tubular sealing element is in vertical alignment with the respective bottle in said arcuate portion of said path.

3,852,941

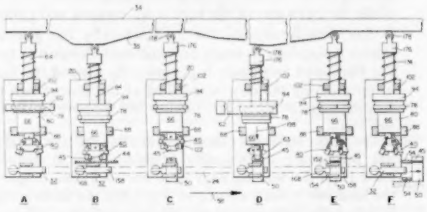
VIAL CAPPING APPARATUS

Charles Frederick Bross, Chicago, Ill., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Aug. 20, 1973, Ser. No. 389,906

Int. Cl. B67b *3/20;* **B65b** *7/28*

U.S. Cl. 53—317 **6 Claims**



1. A capping machine for assembling a cap to a vial with rotation and pressure, said capping machine being adapted for operative association with:

a. first means for delivering caps to a first location;

b. second means for delivering filled vials to a second location; and

c. third means for receiving capped vials at a third location; said capping maching comprising:

d. a rotary worktable mounted for rotation about an upright axis;

e. at least one capping device mounted on said worktable adjacent its periphery for rotation therewith;

f. fourth means for rotating said worktable whereby said capping device moves therewith in an arcuate path through said first, second, and third locations; said capping device including:

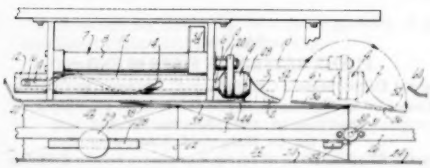
g. a vial holder for receiving a vial from said second means, for tightly holding said vial between said second and third locations, and for delivering said vial to said third means;
h. a cap holder comprising a pair of fingers for holding a cap by the rim thereof, a mechanism for moving said fingers toward one another to closed position for holding a cap during movement of said capping device between said first and third locations and for moving said fingers apart to release said cap from said fingers at said third location;
i. an elongated, upright spindle mounted for upward and downward movement in axial direction;
j. a barrel mounted on said spindle for rotation about the longitudinal axis of said spindle and being movable upwardly and downwardly with said spindle, said barrel supporting said cap holder at the lower end thereof;
k. a first cam follower connected to said spindle;
l. a first cam arranged in camming relation to said first cam follower, said first cam having a camming surface contoured for moving said cap holder with said spindle and said barrel downwardly at said first location whereby said cap holder descends on a cap at said first location, the camming surface of said first cam being contoured to effect upward movement of said cap holder with said spindle between said first and second locations, and said camming surface of said first cam being contoured to effect downward movement of said cap holder with said spindle between said second and third locations whereby said cap holder is biased downwardly on said vial during assembly of said cap to said vial;
m. a turning ring formed about said spindle on the surface of said barrel;
n. A turning block engageable with said turning ring between said second and third locations for rotating said cap by said cap holder relative to said vial during assembly of said cap to said vial;
o. an aligning ring on said barrel formed about the axis of said spindle and including a pair of flat spots therein, said flat spots being disposed inwardly of adjacent portions of said aligning ring, and
p. a second turning block engageable with said aligning ring between said third location and said first location for rotating said cap holder until said fingers are spaced apart in the direction of movement between said third location and said first location.

3,852,942

APPARATUS FOR OPENING A CARTON FLAP

Lloyd D. Johnson, Portland, and John L. Raudat, North Madison, both of Conn., assignors to Emhardt Corporation, Bloomfield, Conn.

Filed Oct. 15, 1973, Ser. No. 406,731
Int. Cl. B65b *43/39*
U.S. Cl. 53—382 **14 Claims**



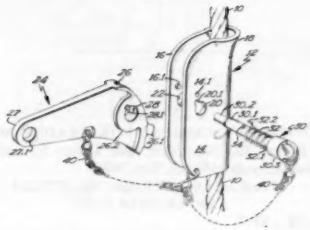
1. Apparatus for opening a flap of a carton which is folded inwardly at the edge of a panel of the carton, comprising:
means for conveying cartons endwise;
means for stopping each carton at a predetermined location;
flap opener holding means disposed adjacent and spaced from said conveying means a distance sufficient to allow a carton between said conveying means and said flap opener holding means;
a flap opener disposed on said flap opener holding means;
means for rotating said flap opener and translating said flap opener from a rest position towards a flap to be opened such that said flap opener moves in a helical-like path to engage and open the flap; and
means for returning said flap opener to the rest position.

3,852,943

PORTABLE SAFETY CLAMP

Gerald S. Healy, Red Wing, Minn., assignor to Meyer Industries, Inc., Red Wing, Minn.

Filed Aug. 27, 1973, Ser. No. 391,575
Int. Cl. F16g *11/00;* **F44b** *21/00*
U.S. Cl. 24—134 R **9 Claims**



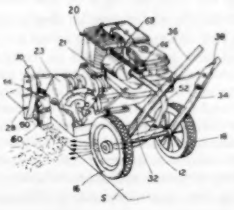
1. A portable safety clamp for connection of a workman's safety belt to an upstanding safety rope, the clamp comprising an elongate portable rope housing having a generally U-shaped internal cross section adapted to longitudinally receive a safety rope and having opposed, apertured walls; an elongate brake lever having a bearing orifice intermediate its length and having a brake shoe at one end extending inwardly of the housing for contact with a rope therein, the other end of the brake lever extending outwardly for connection to a workman's safety belt; a removable pivot pin extending through the bearing orifice and the wall apertures; a helical spring mounted about one end of the pivot pin for acting in torsion to urge the brake shoe into contact with a rope in the housing; the pivot pin having a releasable latch at its other end abutting the outer surface of a housing wall aperture and held lockingly thereagainst by the compressive force of the helical spring.

3,852,944

LAWN EDGER

William T. Zuercher, Marshalltown, Iowa, assignor to Copper Manufacturing Company, Marshalltown, Iowa

Filed May 7, 1973, Ser. No. 357,521
Int. Cl. A01d *69/00*
U.S. Cl. 56—12.2 **6 Claims**



1. A lawn edger comprising a wheeled frame movable over a surface in a first direction, drive means on said frame emit-

ting exhaust gas under pressure, blade means rotatably carried on said frame and adapted to be driven by said drive means, said blade means rotatable about a substantially horizontal axis, deflector means on said frame rearwardly of said blade means, and extending transversely of said blade means, said deflector means comprising a bracket secured to the frame and a resilient flap secured to the bracket and extending transversely relative to the frame for intercepting debris hurled rearwardly by the blade means, and conduit means having an inlet portion connected to said drive means and having a frame supported portion within an outlet for conducting exhaust gas from the driver means and discharging same across said surface rearwardly of the deflector means, whereby debris thrown by the blade means will be deflected by the deflector means to said surface and then said debris will be blown away by the exhaust gas.

3,852,945

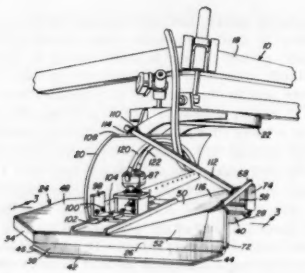
MOWER ATTACHMENT FOR GRADER BLADE

Ray J. Berry, 524 No. 33rd, and Lonzo L. Simons, 2820 Morrow St., both of Waco, Tex. 76707

Filed July 9, 1973, Ser. No. 377,233

Int. Cl. A01d *55/22*

U.S. Cl. 56—12.7 **10 Claims**



1. A heavy duty rotary mower for support from a mobile vehicle, said mower having an elongated frame defining opposite sides and front and rear ends and including longitudinal opposite side members and transverse members extending between said opposite side members and rigidly connecting the latter at points spaced therealong, vertical shaft means journaled from said frame intermediate its opposite sides and front and rear ends, horizontal rotary blade means mounted on said shaft means between said side members, and motor means carried by said frame drivingly connected to said shaft, a road grader of the type having a central transverse grader blade supported therefrom for angular displacement about an upstanding axis and adjustable tilting about an axis extending longitudinally of said grader as well as vertical adjustment relative to the latter, said rotary mower being mounted on one end of said blade and projecting at least slightly outwardly of said one end of said blade, said transverse members including a central transverse member connected to and extending between said side members and from which said means is journaled, said central transverse member comprising an upwardly opening channel member including a lower web portion and opposite side upstanding flanges, said motor means being carried by said channel member centrally intermediate its opposite ends, and mounting brackets carried by said channel member on opposite sides of said motor, said one end of said grader blade including mounting brackets carried by and spaced along the lower marginal portion of said one end of said grader blade from which the first mentioned mounting brackets are releasably supported.

3,852,946

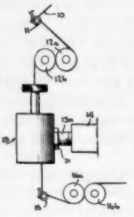
BULK YARN

James O. Smith, Winston-Salem, N.C., and Carl R. Delagrange, Ripplemead, Va., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 687,077, July 10, 1967, abandoned, which is a continuation of Ser. No. 425,372, Dec. 24, 1964, abandoned, which is a division of Ser. No. 812,718, May 12, 1959, abandoned. This application Nov. 12, 1970, Ser. No. 89,024

Int. Cl. D02g *1/02, 1/16, 3/24*

U.S. Cl. 57—140 R **9 Claims**



1. A steam thermally set and steam false twist bulked multifilament yarn comprising a plurality of false twisted helically crimped filaments, each of said filaments being characterized by varying helical tightness and a plurality of different helix angles along its length, said filaments being out of crimp registry with one another as the yarn issues from the false twister without further processing, said yarn having been false twisted in a venturi type steam jet into which the steam is fed eccentrically of the yarn passageway and the venturi chamber, the steam simultaneously imparting a false twist to the yarn, functioning as the false twist setting fluid in the steam jet and deregistering crimps of adjacent filaments, said yarn being substantially free of loops.

3,852,947

FLAME RETARDANT FIBER BLEND

Michael Dainis Mayer, Charlotte, N.C., assignor to Celanese Corporation, New York, N.Y.

Filed Dec. 10, 1971, Ser. No. 206,852

Int. Cl. D02g *3/04, 3/44*

U.S. Cl. 57—140 BY **8 Claims**

1. A flame-retardant fiber-blend comprised of at least 10 weight percent (by weight of blend) of flame-retardant acetate fiber and from about 10 to about 90 weight percent (by weight of blend) of polyester fibers, wherein:

a. said flame-retardant acetate fiber is comprised of from about 0.5 to about 25 weight percent of at least one tris(polyhaloaliphatic) phosphate containing from about 3 to about 24 carbon atoms, and

b. said polyester fiber comprises at least 90 weight percent of the non-flame-retardant acetate fibers of the blend.

3,852,948
YARNS, TOWS, AND FIBERS HAVING DIFFERENTIAL SHRINKABILITY

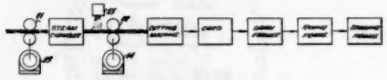
James Nelson Ruddell, 19 Glenroy Ave., Portadown, and Herbert Alexander Conway Todd, 25 Coolsara Park, Lisburn, both of Northern Ireland

Continuation-in-part of Ser. No. 219,048, Aug. 23, 1962, Pat. No. 3,302,385, Continuation-in-part of Ser. No. 176,455, Feb. 12, 1962, abandoned. This application Feb. 24, 1964, Ser. No. 346,870

Claims priority, application Northern Ireland, Aug. 26, 1961, 30850/61; Jan. 17, 1962, 1796/62; Jan. 17, 1962, 1797/62; May 25, 1962, 20135/62

Int. Cl. D02g *3/24*

U.S. Cl. 57—140 R 14 Claims



1. A tow of continuous filamentary textile material adapted to be subdivided into staple fibers of generally predetermined length in which the continuous filaments thereof cyclically vary in gradual and continuous manner in latent shrinkage characteristic longitudinally thereof between predetermined minimum and maximum limits of significantly different values, the length of the cycle of said variation being substantially greater than said predetermined length of said staple fibers.

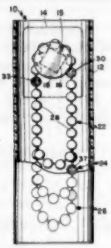
3,852,949
PLURAL CYCLE DISPLAY DEVICE

Robert N. Sayler, 2440 Huntleigh, Oklahoma City, Okla. 73120

Filed June 8, 1973, Ser. No. 368,239

Int. Cl. G04b *45/00*; A63f *1/00*; G04f *11/62*

U.S. Cl. 58—2 7 Claims



1. A device for displaying the relative position of plural time-based cyclic parameters comprising:

a frame,

a motor mounted on said frame,

a plurality of continuous elements supported for rotation about an axis transverse to the major plane of said continuous elements,

each of said continuous elements comprising an elongated member joined at its ends and being divided into a plurality of segments substantially equal in length,

a drive means driven by said motor for engaging said segments on each of said plurality of continuous elements and moving each of said segments an equal distance,

said plurality of continuous elements being of a plurality of different lengths, said continuous elements differ in length by increments equal to said segments,

at least one of said segments on each of said continuous elements being marked as indicia means for indicating the phase of a time-based cycle represented by said continuous elements.

3,852,950
ELECTRONIC TIMEPIECE

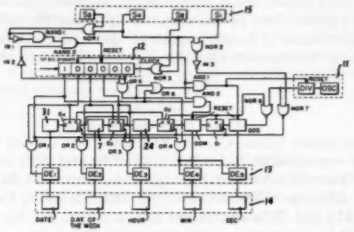
Kazuhiro Yoda, Tokyo, and Kojiro Tanaka, Yachiyo, both of Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Dec. 4, 1972, Ser. No. 311,945

Claims priority, application Japan, Dec. 7, 1971, 46-98296

Int. Cl. G04b *19/24*, *27/00*

U.S. Cl. 58—4 A 6 Claims



1. An electronic timepiece comprising, means generating time signal pulses constituting a time base, counting means receptive of said time signal pulses for counting said time signal pulses, means connected to the counting means developing digital outputs representative of time corresponding to at least one of date, day of the week, hour, minute and seconds time indications, display means connected to the means developing digital outputs to diaplay at least one of said time indications, and control means connected to said counting means and said display means for selectively displaying individually said time indications on said display means and including means for selectively setting each of said time indications to a desired value.

3,852,951
ELECTRONIC CORRECTION

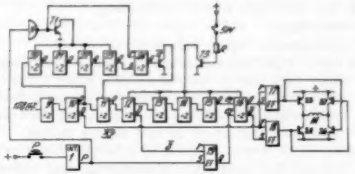
Pierre Sauthier, Bienne, Switzerland, assignor to Societe Suisse Pour L'Industrie Horlogere Management Services S.A., Bienne, Switzerland

Filed July 12, 1973, Ser. No. 378,627

Claims priority, application Great Britain, July 12, 1972, 32577/72

Int. Cl. G04c *3/00*; G04b *27/00*

U.S. Cl. 58—23 R 7 Claims



1. Time-piece in which a time standard supplies signals of a predetermined frequency to a first sequence of bistable devices arranged and adapted to provide output signals of a desired frequency to a display arrangement in which at least "seconds" are displayed, wherein means are provided to set the seconds display through the supplying of additional output signals or the withholding of output signals, said means including a complement output terminal on at least one of the bistable devices in the first sequence, a bistable storage device

arranged to be manually switchable to a first stable state and to be automatically restored to a second stable state by signals obtained from the complement output terminal, a display control toggle having an input arrangement which logically combines said output signals from the first sequence of bistable devices with signals from the bistable storage device, a delay circuit having a controllable disabling switch and receiving an input from a predetermined bistable device in the first sequence in order to provide an output adapted to block signal transmission from at least one bistable device in the first sequence; and a manually operable switch coupled to the bistable storage device and the delay circuit disabling switch, whereby actuation of the manually operable switch for a time period less than that of the delay circuit adds one signal to the seconds display and actuation of the manually operable switch for a greater time period adds one signal and thereafter blocks transmission of further signals to the seconds display for as long as the manually operable switch continues to be actuated.

3,852,952

ELECTRONIC WATCH

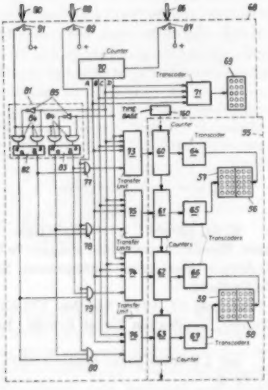
Eric Andre Vittoz, Cernier-Neuchatel, and Claude Fonjallaz, Cormondreche-Neuchatel, both of Switzerland, assignors to Centre Electronique Horloger S.A., Neuchatel, Switzerland

Division of Ser. No. 187,961, Oct. 12, 1971, Pat. No. 3,823,545. This application Aug. 2, 1973, Ser. No. 385,041

Claims priority, application Switzerland, Oct. 20, 1970, 15464/70

Int. Cl. G04c *3/00;* **G04b** *19/30;* **G06f** *7/56*

U.S. Cl. 58—23 R **3 Claims**



1. An electronic watch, comprising:

a time base;

an electronic display means;

a logic circuit having an input coupled to an output of said time base and an output coupled to an input of said display means, said logic circuit including a first counting circuit and transcoding means coupling the output of said first counting circuit to said display means;

data input means coupled to a further input of said logic circuit for selectively transferring data signals to said further input, said data input means comprising

a pulse generator,

first manual control means for controlling the output of said pulse generator, and

a second counting circuit coupled to the output of said pulse generator;

second manual control means coupled between the output of said second counting circuit and said further input of said logic circuit for selectively transferring data from said second counting circuit to said logic circuit; and

a selection circuit coupled to said first counting circuit and said transcoding circuit for selectively controlling the display of the outputs of said first and second counting circuits on said display means.

3,852,953

CONTROL AND SYNCHRONISATION OF CLOCKS

Sensino Walter Mischiatti, Via Gilino 9, Milan, Italy

Filed Apr. 9, 1973, Ser. No. 349,662

Claims priority, application Italy, Apr. 12, 1972, 7236/72

Int. Cl. G04c *3/02*

U.S. Cl. 58—24 R **11 Claims**

1. A system for controlling and synchronising slave clocks, the system comprising a plurality of slave clocks; and a central station for transmitting to each slave clock coded signals, each said signal conveying in coded form complete information as to the time to be displayed by the slave clocks; each slave clock comprising means to display time, a receiver for receiving said signals, means to derive information as to the time displayed by said slave clock, means to compare said derived information with said information conveyed by each said signal, and means to up-date the time displayed by said slave clock when said compared information does not correspond.

3,852,954

MECHANICAL WATCH MOVEMENT

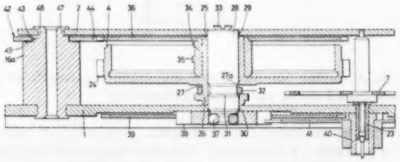
Peter Bachmann, Bettlach, Switzerland, assignor to Ebauches Bettlach S.A., Canton of Soleure, Switzerland

Filed Apr. 30, 1974, Ser. No. 465,580

Claims priority, application Switzerland, May 11, 1973, 6731/73

Int. Cl. G04b *33/00, 1/16*

U.S. Cl. 58—59 **10 Claims**

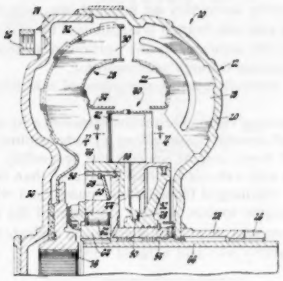


1. A mechanical watch movement comprising a driving barrel held in place axially between two frame elements, a wheel-train connecting the barrel-drum to an escapement, and a dial-train connecting the barrel-drum to hour- and minute-indicating members, wherein the barrel comprises an arbor passing through at least one of the said frame elements and having one end projecting over the outer side of the movement, a member of the said dial-train is fastened to the said projecting end of the barrel-arbor, and the arbor is connected to the drum by a friction coupling comprising a resilient bolt fixing the arbor axially to the drum.

3,852,955
TORQUE LIMITING CONVERTER STATOR

Quinby E. Wonn, Plymouth, and William J. Vukovich, Ann Arbor, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Feb. 8, 1974, Ser. No. 440,784
Int. Cl. F16h *41/12*
U.S. Cl. 60—354 **5 Claims**

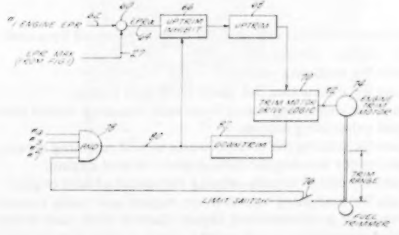


1. A fluid torque converter comprising, impeller means adapted to be driven by an engine for creating fluid flow in said torque converter; turbine means for delivering torque from said torque converter in response to fluid flow from said impeller; and reactor means for redirecting the fluid flow from said turbine to said impeller including a plurality of vane means angularly disposed in the flow path between said turbine and impeller, annular drum means, and a plurality of pivot means rotatably supported in said annular drum means having one portion secured to the vane means and another portion operatively connected to a relatively stationary member, said vane means and said annular drum means being movable axially relative to said impeller means in response to fluid flow forces on said vane means for changing the angular disposition of said vane means in said flow path for controlling the capacity of said torque converter to limit the maximum output torque of said torque converter.

3,852,956
AIRCRAFT ENGINE PRESSURE RATIO AUTOTRIM SYSTEM

Anthony N. Martin, Simsbury, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Division of Ser. No. 274,123, July 21, 1972, Pat. No. 3,813,063. This application Dec. 3, 1973, Ser. No. 421,015
Int. Cl. F02c *7/02*; F02g *1/06*
U.S. Cl. 60—39.15 **4 Claims**



1. In an aircarft having a plurality of turbine engines, an engine autotrim system for maintaining each of said plurality of engines at the same pressure ratio comprising

means for determining the pressure ratio across each of said plurality of engines and producing an engine pressure ratio signal indicative thereof,

means for selecting from said plurality of engine pressure ratio signals the maximum of said signals,

means for comparing each of said plurality of engine pressure ratio signals with said maximum signal to produce for each engine a pressure ratio error signal proportional to the difference therebetween,

a fuel control for each of said plurality of engines for varying the flow of fuel thereto,

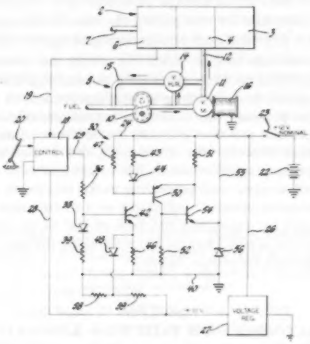
fuel trimming means connected with each of said fuel controls and adapted to vary the fuel flow to each said respective engine, said fuel trimming means having a limited fuel adjustment range,

and means for connecting each said pressure ratio error signal with the fuel trimming means for its respective engine to actuate said fuel trimming means and vary the flow of fuel to the engine in an amount and direction to null said pressure ratio error signal.

3,852,957
FUEL VALVE CONTROL AMPLIFIER

James L. Davis, and Edward L. Lopke, both of Kokomo, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 6, 1973, Ser. No. 385,952
Int. Cl. F02c *9/08*
U.S. Cl. 60—39.28 R **4 Claims**

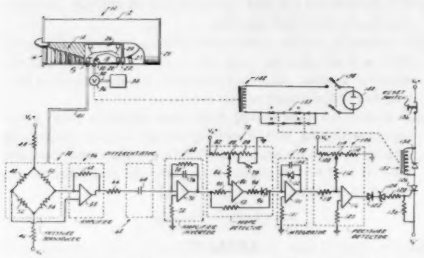


1. An amplifier for use in a fuel control system for a gas turbine engine including a control system providing an electric potential signal indicative of requested engine power level and including fuel metering means responsive to the magnitude of an electric current for regulating fuel flow to the engine, the amplifier comprising, in combination, a first amplifier stage having a controlling potential input from the said potential signal and having a first resistor in its output circuit, effective to maintain potential across the resistor and thus current in the output circuit at a first ratio to the potential signal over a first range of operation corresponding to a lower range of requested power level; a voltage divider energized from a source of constant potential; unidirectional conducting means connecting the output circuit to the voltage divider so that the first resistor is shunted by a portion of the voltage divider above a predetermined potential across the first resistor to maintain current in the output circuit at a second and higher ratio to the potential signal over a second range of operation corresponding to a higher range of requested power level; and a second resistor in the output circuit of the first amplifier stage providing an output potential varying with current in the output circuit.

3,852,958
STALL PROTECTOR SYSTEM FOR A GAS TURBINE ENGINE

Max Martin Adams, Cincinnati, Ohio, and Vernon Robert Duncan, Erlanger, Ky., assignors to General Electric Company

Filed Sept. 28, 1973, Ser. No. 401,650
Int. Cl. F02c *3/06, 9/04*
U.S. Cl. 60—39.28 R **10 Claims**



1. A stall protector system for a gas turbine engine of the type having a compressor, combustor, turbine and exhaust duct in serial flow relation comprises:

means for measuring compressor pressure and providing an electrical output signal corresponding to the actual compressor pressure measured;

a differentiator for differentiating the output signal from the measuring means and providing an output signal indicative of the rate of change of compressor pressure;

a slope detector for comparing the rate of change of compressor pressure with a reference rate signal indicative of the maximum rate at which the compressor pressure may be expected to decrease during normal operation;

an integrator for providing a time integration of the compressor pressure rate when the actual rate of decrease of compressor pressure exceeds the reference rate;

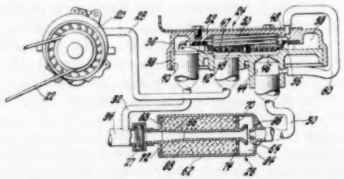
a pressure detector for comparing the actual change in compressor pressure from the integrator with a second reference signal corresponding to the minimum change in compressor pressure indicative of a compressor stall;

and means for regulating the flow of fuel to the combustor when the actual change in compressor pressure exceeds the second reference signal.

3,852,959
SECONDARY AIR INJECTION APPARATUS

Thomas W. Weisgerber, Saginaw, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 26, 1973, Ser. No. 400,794
Int. Cl. F02b *75/10*
U.S. Cl. 60—290 **6 Claims**



1. Apparatus for injecting secondary air into the exhaust conduit of an internal combustion engine or the like comprising

a constant displacement air pump having a discharge port, said air pump when driven by an internal combustion engine discharging air under pressure from said discharge port at a flow rate which increases with engine speed,

conduit means fluidly connected to said discharge port at one end and adapted to be connected to an exhaust conduit of said internal combustion engine at another end,

said conduit means comprising parallel branches, one of said branches including an aspirator having a motive fluid inlet for receiving air discharged from said air pump, an inlet suction port means located downstream of said motive fluid inlet and exposed to ambient air, a combined fluid outlet downstream of said inlet suction port means and a check valve downstream of said combined fluid outlet, whereby secondary air injected into said exhaust conduit via said one branch is augmented by ambient air sucked into the aspirator by the portion of air from said air pump flowing through said aspirator,

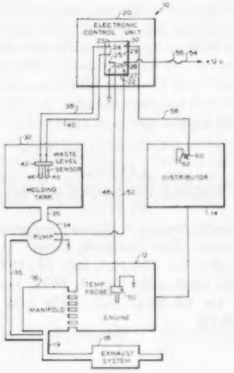
valve means normally closing the other of said branches, and

means for opening said valve means responsive to air flow through said conduit means above a predetermined value whereby at lower engine speeds, the secondary air injected into said exhaust conduit is greater than the volume of air discharged from said air pump, and whereby at higher engine speeds, at least a portion of the air discharged from said air pump bypasses said aspirator and is injected directly into said exhaust conduit.

3,852,960
PORTABLE WASTE DISPOSAL SYSTEM HAVING AUTOMATIC CONTROL MEANS

Philip A. Essenpreis, 805 Florida Ave., Cocoa, Fla. 32933, and Wayne Morehouse, Merritt Island, Fla., assignors to said Essenpreis, by said Morehouse

Filed July 11, 1972, Ser. No. 270,602
Int. Cl. F01n *3/02*; **B01d** *3/00*; **C02c** *3/00*
U.S. Cl. 60—317 **13 Claims**



1. A waste disposal system for a vehicle powered by a combustion engine, comprising:

means for retaining waste;

means for exhausting hot gases from said engine;

means for delivering waste from said retaining means into said exhausting means;

means for sensing the level of waste in said retaining means;

means for sensing the temperature of said engine;

means for electronically sensing the speed of said engine;

means for activating said delivery means only upon coincidence of predetermined inputs thereto from said waste level, temperature and speed sensing means; and wherein said predetermined inputs are representative, respectively, of the presence of waste in said retaining means, and sufficient engine temperature and speed to achieve burning of said waste.

3,852,961
HEAT EXCHANGER PRE-HEATING COMBUSTION AIR IN A STIRLING CYCLE ENGINE

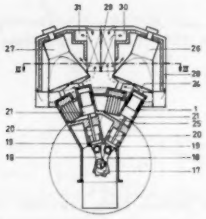
Nils Arvid Salomonsson, Landskrona, and Bo Goran Torsten Torstensson, Bara, both of Sweden, assignors to Kommanditbolaget United Stirling (Sweden) AB & Co., Malmo, Sweden

Filed Feb. 16, 1973, Ser. No. 333,391

Claims priority, application Great Britain, Feb. 19, 1972, 7801/72

Int. Cl. F02g *1/04*

U.S. Cl. 60—517 **5 Claims**



1. A multi-cylinder hot gas Stirling cycle engine having at least two combustion chambers external to the cylinders of the kind affording increasing dimensions in the direction away from the point of fuel injection, said two chambers for corresponding ones of said cylinders located with a common passageway therebetween, a heat exchanger positioned in said passageway, and structure surrounding said cylinders passing combustion air for said external combustion chambers through said heat exchanger and for passing exhaust gases from said two external combustion chambers through said exchanger in a heat-exchanger relationship to pre-heat said combustion air with said exhaust gases.

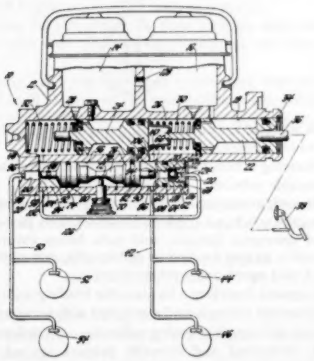
3,852,962
MASTER CYLINDER PARTIAL SYSTEM DISPLACEMENT MODIFIER

Edward H. Warwick, Englewood, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 26, 1973, Ser. No. 344,719

Int. Cl. F15b *7/00*

U.S. Cl. 60—561 **3 Claims**



1. For use in a brake system having a dual pressurizing chamber master cylinder and dual pressure circuits normally pressurized thereby upon brake actuation,

a master cylinder displacement modifier comprising:

a housing having a bore therein defined by a side wall and first and second end walls;

a reciprocable piston sealingly received in said bore to define therewith a first pressure chamber at one bore end and a second pressure chamber at the other bore end, each pressure chamber having a pressure inlet port for receiving pressurized brake fluid from a pressurizing chamber of the master cylinder and a pressure outlet port for delivering pressurized brake fluid to a dual pressure circuit, the forces generated by pressures in said pressure chambers acting in opposite directions on said piston;

a recess in said first end wall at said first pressure chamber outlet port, a first plug valve element on said piston positioned to extend into said recess and close said first pressure chamber outlet port upon movement of said piston toward said first pressure chamber outlet port in response to a predetermined minimum pressure differential acting across said piston toward said first end wall;

a third port communicating with said first pressure chamber, a fourth port in said second end wall, and a fluid pressure conduit connecting said third and fourth ports; a passage and a valve chamber in said second end wall communicating said second pressure chamber and said fourth port, a check valve in said valve chamber when closed interrupting communication between said valve chamber and said fourth port;

a second plug valve element on said piston positioned to extend into said passage in passage sealing relation upon movement of said piston toward said second end wall in response to a predetermined minimum pressure differential acting across said piston toward said second end wall, said second plug valve element being positioned to permit fluid communication between said second pressure chamber and said passage subject to the opening of said check valve, such position of said second plug valve element permitting the use of the master cylinder displacement of both pressurizing chambers thereof for pressurizing the brake circuit connected with the second pressure chamber outlet port when the other brake circuit has lost pressure and said first-mentioned predetermined minimum pressure differential is exceeded.

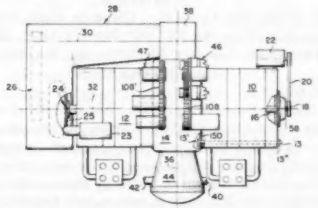
3,852,963
CONNECTING AND ACCESSORY DRIVE MEANS FOR SEPARATE INTERNAL COMBUSTION ENGINES

Gibson O. Hufstader, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 27, 1973, Ser. No. 401,391

Int. Cl. F01b *21/00*; **F02b** *73/00*

U.S. Cl. 60—717 **9 Claims**



1. An internal combustion engine assembly including two separate engines drivingly connected with their respective crankshafts in axial alignment comprising: a coupling member positioned intermediate the aligned crankshafts and providing a driving connection therebetween; accessory driving means on the exterior surface of said coupling member; a plurality of engine accessories mounted with their respective driven members coplanar with said accessory driving means; means providing a driving connection between said accessory drive

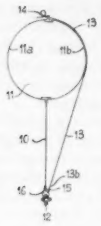
means and said driven means; an intermediate housing member secured to the respective engine housings fastening them together and enclosing said crankshaft coupling member; means extending between said engines and said intermediate housing maintaining the engines in alignment; and an outer end of one engine crankshaft being drivingly connected with a vehicle transmission assembly providing an output from the engine assembly.

3,852,964

FLOATING ANTI-POLLUTION DEVICE

Louis Ballu, Epernay, France, assignor to Kleber-Colombes, Paris, France

Filed July 14, 1972, Ser. No. 271,825
Claims priority, application France, July 15, 1971, 71.26043
Int. Cl. E02b *15/04, 3/06*
U.S. Cl. 61—1 F **18 Claims**



1. In a floating anti-pollution device for stopping bodies and materials floating on the surface of water, said device being of the type having a skirt means supported by float means, the improvement comprising means for regulating the draught of the device, characterized in that said means for regulating the draught includes a plurality of connecting means, each of said plurality of connecting means connected to said skirt means and said float means at intervals in the longitudinal direction of said skirt means and said float means individually varying the height of said skirt means at said intervals, thereby regulating the draught of the device at said intervals, and further characterized in that said skirt means is maintained at least partially wound about said float means by said connecting means.

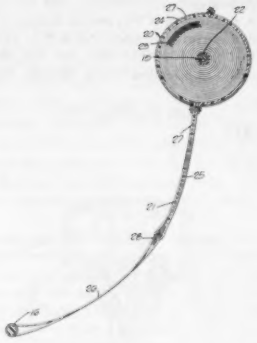
3,852,965

FLOTATION TYPE WATER SWEEP BOOM AND METHODS

Chris H. Rudd, 824 Luton Dr., Glendale, Calif. 91206

Continuation of Ser. No. 207,187, Dec. 13, 1971, abandoned.
This application Oct. 31, 1973, Ser. No. 411,277
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **20 Claims**

1. A floating boom comprising, a horizontally elongated and generally vertically extending floating curtain means having an upper extremity floating at the water surface and extending downwardly a substantial distance to a lower extremity, means for towing said curtain means laterally through the water from beyond the horizontal ends of said curtain means including at least one tow line connected along the lower extremity of said curtain means for towing said curtain means at an angle of attack with said lower extremity in advance of said upper extremity, said curtain means including an impervious upper skirt portion constrained to said angle of attack by said towing and having a lower edge positioned in advance of the rest of the skirt portion, said curtain means being bendable along its length in both the vertical and horizontal directions for assuming the contour of the water surface in response to wave action and currents, and said curtain means having a lower portion including spaced tension elements for connecting the tow line continuously along the lower extremity of the curtain means



with such lower portion being relatively open for allowing subsurface water to pass freely therethrough.

3,852,966

METHOD FOR CONSOLIDATING IMPERMEABLE SOILS AND PILE PROVIDED THEREBY AS FITTED WITH SPACED APART ENLARGEMENTS

Rosanna Taranto, Corso Vittorio Emanuele 167/c, Napoli, Italy

Filed Apr. 19, 1972, Ser. No. 245,600
Claims priority, application Italy, Dec. 14, 1971, 40450/71
Int. Cl. E02d *3/04, 3/08, 5/34*
U.S. Cl. 61—35 **3 Claims**

1. A method for consolidating impermeable clay or muddy soils which comprises:

1. forming a borehole in the soil extending into the impermeable subsoil;
2. inserting into said borehole a rigid tube formed of alternating solid and apertured wall sections having a plurality of apertures therein, said tube being externally coated with a casing formed of deformable material in the areas of said apertured wall sections;
3. pressure injecting a hardenable binding material into said tube and through said apertured wall sections thereof into said deformable casing, whereby said deformable casing is deformed and laterally presses against the subsoil, thereby providing a plurality of vertically-separated consolidation enlargements along the tube in the areas of said apertured wall sections thereof;
4. permitting said binding material to at least partially harden and washing or scavenging said tube and repeat-

ing said step (3) at least once to further enlarge the consolidation enlargements provided in said step (3); and

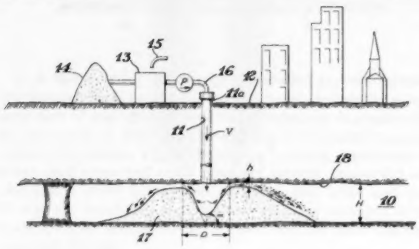
5. permitting the binding material in said tube and in said consolidation enlargement to completely harden and leaving said tube in the soil to thereby consolidate the same.

3,852,967

METHOD OF FILLING SUBTERRANEAN VOIDS WITH A PARTICULATE MATERIAL

John D. Stewart, Littleton, Colo., and Milton E. Hesler, Casper, Wyo., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 86,755, Nov. 4, 1970, Pat. No. 3,817,039. This application June 14, 1972, Ser. No. 262,696
Int. Cl. E21f *15/08*
U.S. Cl. 61—35 **1 Claim**



1. A method of disposing of solid waste materials and filling underground voids which comprises:

a. particulating said waste material to form solid particles ranging in size from about minus 3 to about plus 300 mesh;

b. forming a suspension of said solids in an aqueous liquid;

c. injecting said suspension through a closed pressurized system into said void in a substantially vertical direction at an injection rate at least equal to that calculated by the formula $V = Xd\ \pi\ Dv$, wherein v is the minimum rate of injection in cubic feet per minute, X is a number of 3 or greater, d is the diameter in feet of the largest solid particles in said suspension, D is the diameter of the base of a cone form by said particles when settled in said carrier liquid when motionless, said cone having a height about equal to the height of the void to be filled, and v is the minimum linear velocity of said suspension,

d. permitting the suspension to flow through said void in a manner such that the suspension seeks its own direction, and

e. continuing such injection and subsequent flow through the void until an area of the void is filled with solid particles in a pattern determined by the flow of the suspension through the void in the self-seeking direction.

3,852,968

TORSION-MODE BREASTING DOLPHIN

Myle J. Holley, Jr., 1367 Massachusetts Ave., Lexington, Mass. 02173

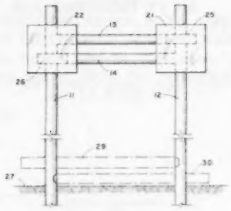
Filed Nov. 19, 1973, Ser. No. 417,326
Int. Cl. E02b *3/22*
U.S. Cl. 61—46 **16 Claims**

1. A breasting dolphin comprising:

a pair of pipe piles embedded in the bottom a chosen distance apart;

means secured to and extending away from individual ones of said piles toward the other of said piles for transmitting to said piles impact forces of a docking ship; and

fender means supported from the free ends of said means secured to said piles so that loading forces in a first mode of operation resulting from a ship impacting said fender means are transferred to and develop stresses by torsion



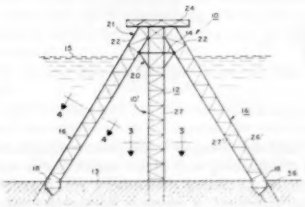
and bending in either one or both of said piles depending upon the point of application of these loading forces with respect to said piles.

3,852,969

OFFSHORE PLATFORM STRUCTURES

Robert G. Gibson, and Samuel C. Carruba, both of Houston, Tex., assignors to Fluor Corporation, Los Angeles, Calif.

Filed May 4, 1973, Ser. No. 357,446
Int. Cl. E02b *17/00*
U.S. Cl. 61—46.5 **6 Claims**



1. A method of constructing an offshore platform structure on a selected site on the sea floor, comprising:

transporting to the site at least one center column having a length which is greater than the depth of the body of water at said site;

transporting to said site at least three batter columns, the central column and each batter column having a multi-legged structure consisting of at least three legs, each leg having an upper end, a lower end, and each batter column having a length which is considerably greater than the length of said center column;

erecting the center column on a selected area within said site whereby its upper end extends above the water surface;

securing the lower end of said center column to said floor;

erecting the batter columns around said center column, welding the upper ends of the batter columns to angularly spaced portions about the upper end of the center column above the water surface and fixedly securing their lower ends to said floor in bracing relation to said center column and to each other thereby forming a support structure;

driving piles through the entire length of certain ones of the legs in each column to thereby fixedly secure each column to the sea floor, whereby the axial load on each pile resists a substantial portion of the lateral load on said support structure; and

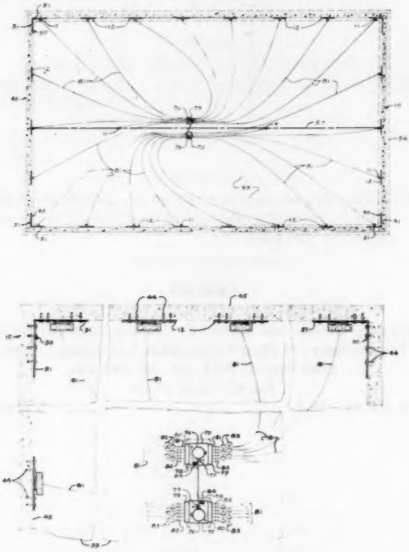
framing a working platform onto the erected support structure.

3,852,970

BUILDING RAISING AND UNDERPINNING SYSTEM

Paul G. Cassidy, Glen Ellyn Rd., Bloomingdale, Ill. 60108

Filed July 13, 1973, Ser. No. 379,116
Int. Cl. E02d 17/02, 3/08
U.S. Cl. 61—51 32 Claims



1. A building raising or underpinning structure comprising a series of attaching wall plates secured to a wall about the perimeter of a building structure, a pile bracket secured to each said wall plate, a series of piles driven into supporting ground and respectively engaged one with each said pile brackets, a series of hydraulic rams operable between the several said pile brackets and the respective piles to drive said piles into the supporting ground, said hydraulic rams being operable simultaneously, hydraulic power means actuating said hydraulic rams, and a hydraulic pressure relief valve controlling a preset maximum pressure developed in each of said hydraulic rams whereby all of said piles are driven into the supporting ground to a point of stability to provide uniform support at all pile locations around the entire perimeter of said building structure.

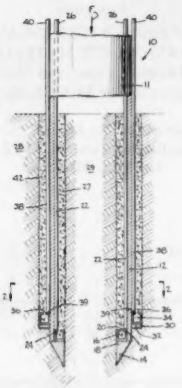
3,852,971

PILE STRUCTURE

Lindsey J. Phares, Sugar Land, Tex., assignor to Raymond International, Inc., Houston, Tex.

Filed July 12, 1973, Ser. No. 378,417
Int. Cl. E02d 5/62
U.S. Cl. 61—53.58 17 Claims

1. A method of forming a pile structure in situ where the earth at particular elevations has negative friction, said pile structure having a pile, annularly shaped band means mounted around said pile at a location corresponding to said particular elevations having negative friction, an annular manifold mounted on the upper surface of said band means, said manifold having a plurality of spaced upwardly directed nozzle openings, tube means extending from near the top end of the pile downwardly to the manifold in fluid flow relationship with respect thereto, said method comprising the steps of driving said pile into the earth until said manifold reaches said particular elevations having negative friction, thence continuing driving said pile into the earth while simultaneously forcing drilling mud down through said tube means into said manifold and upwardly out through said plurality of nozzle openings to



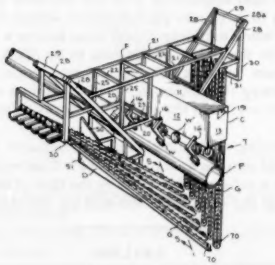
fill the annular space between the walls of said pile and the adjacent earth at said particular elevation having negative friction.

3,852,972

SUBMERGED PIPELINE BURIAL APPARATUS

Robert Holberg, 608 W. Bough Ln., Houston, Tex. 77024

Filed May 17, 1973, Ser. No. 361,151
Int. Cl. E02f 5/06
U.S. Cl. 61—72.4 7 Claims



1. A submerged pipeline burying apparatus for digging a trench beneath a pipe positioned on the bottom of a water body comprising;

carriage means adapted to be moved along the pipe;

auger means carried by said carriage with the lower ends of said auger means adapted to be positioned below said pipe for removing bottom material from the bottom below the pipeline, and

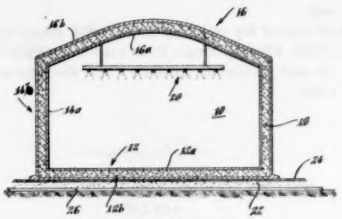
tray means associated with said auger means for moving material dug by such auger means from beneath the pipe upwardly from the bottom.

3,852,973

STRUCTURE FOR STORAGE OF LIQUIFIED GAS

Rudolf Marothy, 447 Mountainview Ave., Valley Cottage, N.Y. 10989

Filed Apr. 12, 1973, Ser. No. 350,378
Int. Cl. F17c 1/08
U.S. Cl. 62—45 11 Claims



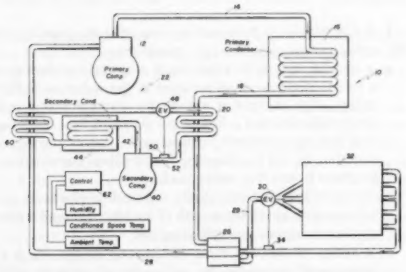
1. A structure for the storage of liquified gas maintained at low temperatures comprising, a structural element forming at least part of said storage structure comprising in combination an inner and an outer concrete facing maintained in spaced-apart relationship, a rigid insulating material positioned between said inner and outer concrete facings, means for saturating said inner facing with moisture, said inner and outer facings and insulating material cooperatively arranged so that loading on the structure is resisted by both the inner and outer concrete facings.

3,852,974

REFRIGERATION SYSTEM WITH SUBCOOLER

Ted R. Brown, 1212 Princeton Ave., Salt Lake City, Utah 84105

Continuation-in-part of Ser. No. 204,554, Dec. 3, 1971, abandoned. This application Aug. 13, 1973, Ser. No. 387,982
Int. Cl. F25b 7/00
U.S. Cl. 62—79 11 Claims



1. A method of modifying an existing refrigeration system to increase the refrigeration capacity thereof, the existing system comprising a compressor, condenser, and evaporator, the evaporator comprising an expansion device and acting to cool a conditioned space, comprising the steps of:

providing a secondary refrigeration system;

placing the evaporation coil of the secondary refrigeration circuit in heat exchange relationship with condensed liquid refrigerant of the existing refrigeration system upstream of the existing system evaporator expansion device;

monitoring temperature in at least one of (1) the existing system conditioned space and (2) the existing condenser environment; and

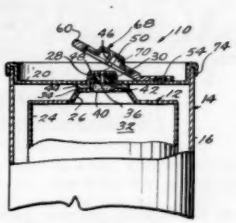
initiating the secondary refrigeration system when the monitored temperature reaches a predetermined upper limit to boost the capacity of the existing system to reduce the temperature in the conditioned space.

3,852,975

SELF-CHILLING CONTAINER WITH SAFETY DEVICE AND METHOD OF MAKING SAME

William D. Beck, 851 S. High St., Columbus, Ohio 43206

Filed Apr. 6, 1973, Ser. No. 348,486
Int. Cl. F25d 3/10
U.S. Cl. 62—294 11 Claims



1. A self-chilling container arrangement for effectively chilling material in the container prior to the material being dispensed and for safely preventing exiting unevaporated refrigerant from deleteriously effecting a user of the arrangement comprising:

container means for housing the material that is to be chilled;

closure means connected to the container means for generally vertical movement so as to expose the material to the atmosphere for subsequent dispensing therethrough;

storage means disposed within a portion of the container means for storing refrigerant;

refrigerant means under pressure within the storage means for chilling the material housed in the container upon exposure to the atmosphere;

communication means defining a refrigerant passageway through both the container means and the storage means for permitting the refrigerant means to evaporate and exit therethrough to the atmosphere;

a shield means selectively movable in a generally vertical path between a first position whereat the shield means seals the communication means so as to prevent evaporation of the refrigerant means and a second position whereat during movement of the shield means between said first and second position, the shield means is in a generally inclined position relative to the communication means so as to permit the refrigerant means to evaporate into the atmosphere and thereby chill the material while also deflecting downwardly any unevaporated refrigerant exiting from the communication means so as to prevent any deleterious effects to a user of the arrangement;

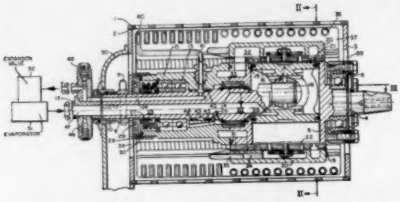
lift means connected to both the shield means and the closure means for effecting the generally vertical movement of the shield means and the closure means;

control means cooperating with the lift means for insuring the proper positioning of the shield means over the communication means during movement between said first and second positions and for insuring that said second position of the shield means is reached prior to the generally vertical upward movement of the closure means so as to expose the material to the atmosphere, thereby providing a more efficient chilling of the material by permitting the refrigerant means to evaporate prior to the exposure of the material to the atmosphere for subsequent dispensing.

3,852,976
AIR CONDITIONING APPARATUS FOR AUTOMOTIVE VEHICLES OR THE LIKE

Rudolf Hintze, Lessingstrasse 32, Heusenstamm, Germany

Filed Nov. 16, 1972, Ser. No. 307,212
Claims priority, application Germany, Nov. 19, 1971, 2157380
Int. Cl. F25b *3/00*
U.S. Cl. 62—499 **20 Claims**

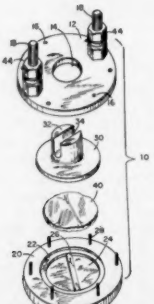


1. In an air conditioning apparatus, particularly for passenger and/or driver compartments of automotive vehicles, in combination, a unit comprising a rotary compressor device for an evaporable cooling agent, including a cylinder and a double-acting piston reciprocably received in said cylinder; a stationary support mounting said cylinder and piston for rotation and including a crankshaft having a crank pin which is arranged to reciprocate said piston in response to rotation of said cylinder; drive means for rotating said cylinder; a condenser device for compressed cooling agent and arranged to rotate with said compressor device, said support having a passage receiving cooling agent from said condenser device; and an evaporator located exteriorly of and separate from said unit, said evaporator communicating with said passage for receiving said cooling agent from the same.

3,852,977
TORQUE TRANSFER DRIVE

Victor B. Chaput, Nashua, N.H., assignor to Alex Simoneau, Nashua, N.H., a part interest

Filed Jan. 30, 1973, Ser. No. 328,101
Int. Cl. F16d *7/02*
U.S. Cl. 64—30 D **1 Claim**



1. A torque transfer drive for coupling a drive shaft to a driven wheel, comprising:

first means coupled to a drive shaft for rotation therewith and having a raised paddle thereon;

second means axially disposed from said first means and having a recess therein with a second paddle disposed in said recess, said second paddle being axially displaced from said raised paddle;

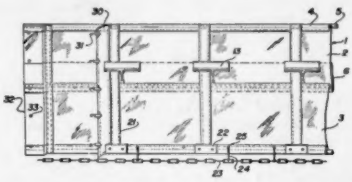
a mass of silicone putty disposed intermediate said first and second means and within the recess of said second means; and

third means for coupling said second means to a driven wheel, whereby torque from a drive shaft will be coupled via said paddles to a driven wheel through said silicone putty.

3,852,978
FLEXIBLE OIL BOOM

Robert A. Fossberg, 1594 De la Broquerie, Bruno, Quebec, Canada

Continuation-in-part of Ser. No. 70,333, Sept. 8, 1970, abandoned. This application May 23, 1973, Ser. No. 363,040
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F **6 Claims**



1. A flexible boom for catching and collecting residues from the surface of bodies of water comprising:

a. a barrier wall of flexible sheet material for depolying in a substantially vertical position in the water such that the upper edge thereof is above the water surface and the lower edge thereof is below the water surface, said barrier wall having an upper portion and a lower portion sewn together by an overlapping longitudinal connection at a location below the water surface,

b. a plurality of substantially vertical pockets in spaced relationship along the length of said barrier wall with each pocket containing a stiffening rod,

c. a series of flexible float connecting straps, each being positioned immediately adjacent a vertical stiffener pocket and each surrounding the lower edge of the barrier wall upper portion and passing through the overlapping sewn connection such that the free ends of each strap extend outwardly from each side of the barrier wall for connecting floats thereto, and

d. individual weights connected to the barrier wall at the lower end of each stiffener pocket,

whereby when the boom is deployed in the water with an individual float connected to each strap free end on each side of each vertical stiffener, each combination of vertical stiffeners, opposed pairs of floats and lower edge weights maintains the boom in a substantially vertical position in the water while permitting limited independent movement of each stiffener and adjacent portions of the flexible barrier wall in both vertical and horizontal directions relative to the remainder of the boom under the action of small choppy waves.

3,852,979

NEEDLE BED CONSTRUCTION FOR KNITTING MACHINES

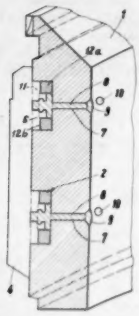
Wolfgang Muhlhausler, Tubingen, Germany, assignor to Fouquet-Werk Frauz & Planck, Rothenburg am Neckar, Germany

Filed July 31, 1972, Ser. No. 276,415

Claims priority, application Germany, Aug. 11, 1971, 2140180

Int. Cl. D04b *15/100*

U.S. Cl. 66—19 16 Claims



1. Machine having a machine element provided with guide ways for lamellae or similar sliding elements (18) comprising at least two locating combs (2) each including a base portion (12) and a comb-like partition element portion (11) secured to the base portion extending from the base portion (12) to leave an unobstructed space beneath the partition element portion (11), the partition element portion (11) defining the direction of movement for the sliding elements;

the machine element (1) being formed with at least two spaced channel-like recesses (3, 13), each shaped to receive the base portion of a locating comb (2), and to secure at least the base portion in said channel-like recesses;

spaced separating liners (4, 14, 19) inserted between the partition element portions (11) adapted to have the sliding elements slide in the spaces between the liners, said liners each having at least two projecting portions (5, 6) extending into the recesses (3, 13) of the machine element (1) alongside the comb-like partition element portions (11) of the combs (2) and being located adjacent the base portions (12) of the combs (2) within the recess; and an adhesive settable compound (8, 25) filling the recesses and securing the base portions (12, 12*a*, 12*b*) of the locating combs (2, 11, 20, 22) and the projecting portions (5, 6) of the liners (4, 14, 19) in position in the machine element (1);

and wherein each of the locating combs within the machine are formed in several adjacent sections, the junction lines of adjacent sections being slanted with respect to the orientation of the comb-like partition elements.

3,852,980

APPARATUS FOR PRINTING AND/OR DYEING OF HIGH PILE WEBS

Peter Zimmer, Untere Sparchen 54, A-6330 Kufstein, Austria

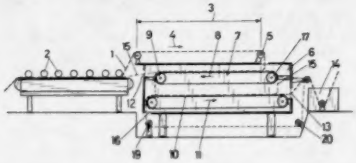
Filed Nov. 16, 1972, Ser. No. 307,242

Claims priority, application Austria, Nov. 25, 1971, 10178/71; Jan. 14, 1972, 339/72

Int. Cl. B05c *9/06, 9/14*

U.S. Cl. 68—5 D 19 Claims

1. A device for printing and/or dyeing pile web, in particular high pile web, said device comprising means for applying dye to the pile side only of a carpet, a steamer positioned downstream of said dye applying means for treating said carpet after receipt of said dye, means for turning said carpet upside down at the inlet into said steamer, and means provided at



least along a first zone of the passage of said carpet through said steamer for maintaining said carpet in a position with said pile side thereof facing downwardly.

3,852,981

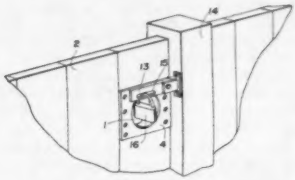
PADLOCK LOCKING DEVICE

Robert A. Koning, Redding, Calif., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Feb. 16, 1973, Ser. No. 333,051

Int. Cl. E05b *65/48*

U.S. Cl. 70—2 3 Claims



1. A padlock locking device for opening a solid hinged unit from either side via a bore formed through the hinged unit, the hinged unit fully enclosing a gate opening, said locking device comprising

a plate member affixed to the unit around the bore, the plate member having a lock portion covering part of the bore and a padlock accommodating hole formed through the lock portion of the plate member; and

a cooperating plate movably affixed to a frame member adjacent the hinged unit, the cooperating plate having a slot formed therethrough for accommodating a padlock, the slot being positioned to overlap the hole through the lock portion of the plate member when the hinged unit is closed and the cooperating plate is in substantially juxtaposed relation therewith whereby a padlock extending through the slot and the hole hangs in the bore and is accessible from both sides of the hinged unit.

3,852,982

RESILIENT RING FASTENER

Francis D. Faris, Bonita, Calif., assignor to Twisty, Inc., National City, Calif.

Filed Dec. 4, 1972, Ser. No. 311,662

Int. Cl. A47g *29/10*

U.S. Cl. 70—457 7 Claims

1. A ring and fastener for releasably joining the ends of a resilient cable into a substantially circular continuous member comprising:

a link of longitudinally resilient and flexible cable,

a male fastener element having a body portion, a shank portion, and an enlarged head portion,

a female fastener element having a body portion, a shank bore at one end of said body portion, and a head entrance bore in said body portion,

said head entrance bore having a diameter in excess of the diameter of said enlarged head,

a shank slot extending from said head entrance bore into said shaft bore,

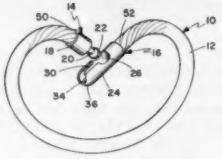
a head seat communicating with said head entrance bore and said shank slot,

the first end of said cable having said male fastener element secured thereto,

the second end of said cable having said female fastener element secured thereto,

said male and said female fastener elements secure said ends of said cable into a substantially circular ring,

the unsecured end of said female fastener element is rounded and forms an outer surface concentric with said head seat,



the spacing between said head seat and said outer surface being substantially equal to the length of said shank of said male fastener element,

said body portion of said male fastener is enlarged and extends radially outwardly from said shank portion,

the distance from said head seat to the unsecured end of said female fastener element is substantially equal to the distance from the attachment point of said head to said enlarged body portion of said male fastener element,

said enlarged body portion of said male fastener element being held substantially in contact with the unsecured end of said female fastener element,

said cable exerting a resilient circumferential bias and holding said enlarged head portion of said male fastener element in contact with said head seat of said female fastener element.

3,852,983

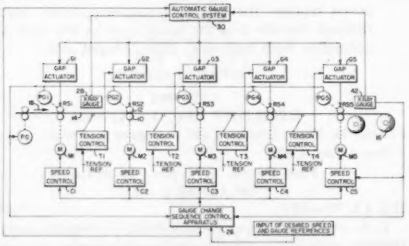
WORK STRIP GAUGE CHANGE DURING ROLLING IN A TANDEM ROLLING MILL

John W. Cook, Williamsville, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 25, 1973, Ser. No. 354,288

Int. Cl. B21b *37/00, 37/14*

U.S. Cl. 72—12 **13 Claims**



1. In a gauge control system for a tandem rolling mill having a plurality of roll stands operative to reduce the gauge of a work strip having a gauge change point and being passed through said rolling mill, the combination of means for controlling the operating speed of a first roll stand, and means responsive to the work strip movement for sensing the arrival of said gauge change point at a second roll stand for providing a predetermined change in the operating speed of said first roll stand while maintaining the present operating speed of the second roll stand, with said predetermined change being in accordance with a relationship including the present operating speed of the second roll stand and the new desired work strip delivery gauge from at least one of said first and second roll stands.

3,852,984

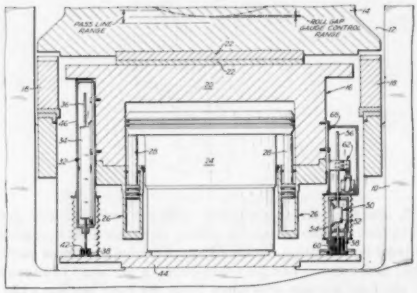
COARSE AND VERNIER ROLL POSITION SYSTEM FOR A ROLLING MILL

Joseph Irwin Greenberger, Pittsburgh, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Mar. 6, 1974, Ser. No. 448,584

Int. Cl. B21b *37/00, 31/34*

U.S. Cl. 72—21 **8 Claims**



1. In a rolling mill having an hydraulic piston cylinder assembly for positioning a roll of the mill to a coarse working position and then positioning said roll in a vernier manner,

a first means for measuring the relative movement between the piston and cylinder of said piston cylinder assembly when said piston cylinder assembly is employed to position said roll to the coarse working position, and

a second means for measuring the relative movement between the piston and cylinder of said piston cylinder assembly when said piston cylinder assembly is employed to position said roll in the vernier manner.

3,852,985

DEVICE FOR PROCESSING ELONGATED TUBULAR WORKPIECES BY PRESSURE WAVES

Jochen Haeusler; Gunter Marz, and Helmut Seiffert, all of Nurnberg, Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Nov. 14, 1969, Ser. No. 876,773

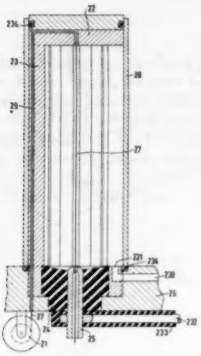
Claims priority, application Germany, Nov. 15, 1968, 1809098

Int. Cl. B21d *26/12*

U.S. Cl. 72—56 **2 Claims**

1. Device for processing elongated tubular workpieces by subjecting them to pressure waves produced in a liquid medium by spark discharge comprising a discharge circuit including condenser means, and a spark gap formed of a pair of spaced electrodes electrically connected to said condenser means, an ignition device disposed in said spark gap between said electrodes thereof, structure means comprising a plurality of bars connected electrically with one another and being disposed parallel to one another in the form of a cage-like structure coaxially surrounding the spark gap and forming part of said discharge circuit, said structure means being encircleable by a tubular workpiece so that the workpiece surrounds the spark gap, said structure means being pervious to pressure transmitted through a liquid medium receivable

therein and generated in the medium by an electrical discharge at the spark gap, at least one of said bars being formed



with an elongated bore for feeding said ignition device therethrough.

3,852,986

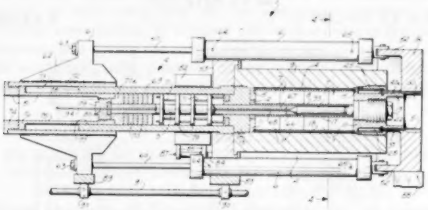
HIGH PRESSURE BILLET EXTRUDER

Francis Joseph Fuchs, Jr., Princeton Junction, N.J., assignor to Western Electric Company Incorporated, New York, N.Y.

Division of Ser. No. 339,457, March 8, 1973, abandoned. This application Mar. 13, 1974, Ser. No. 450,910

Int. Cl. B21c *27/00*

U.S. Cl. 72—60 **7 Claims**



1. Apparatus for extruding a billet, said apparatus comprising:

a. an extrusion chamber adapted to receive said billet and extrusion medium;

b. a jacket chamber surrounding said extrusion chamber and adapted to receive hydraulic fluid to provide external support to said extrusion chamber against internal pressure developed therein;

c. pressurizing means communicating with said jacket chamber and adapted to pressurize the hydraulic fluid therein;

d. first means connected to said pressurizing means and adapted to operate said pressurizing means to pressurize the hydraulic fluid in said jacket chamber to a first level;

e. a die;

f. second means connected to said pressurizing means and adapted to pressurize said extrusion medium and extrude said billet through said die and simultaneously to operate said pressurizing device to increase the pressure of the hydraulic fluid in said jacket chamber from said first level to a second level sufficient to externally support said extrusion chamber against internal pressure developed therein.

3,852,987

FORMING TRANSVERSE CORRUGATIONS IN A TUBULAR BLANK

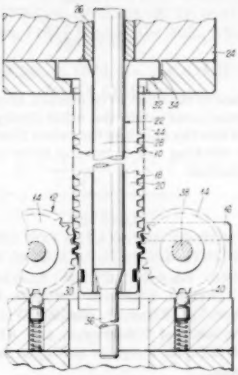
Samuel Price, Harpenden; Thomas Frederick Plummer, Kenton; Robert James Fowler, Kingsbury; Edward Reuben Hill, Arkley; Cecil Woodwards, Hayes, and Ewart Arthur Harrington, Edgware, all of England, assignors to General Motors Corporation, Detroit, Mich.

Filed Mar. 8, 1973, Ser. No. 339,198

Claims priority, application Great Britain, Mar. 18, 1972, 12778/72

Int. Cl. B21d *15/06*

U.S. Cl. 72—193 **6 Claims**



1. A method of forming transverse corrugations in a tubular blank, comprising positioning the blank on an externally transversely corrugated portion of an elongate segmental centre mandrel, the transverse corrugations on which substantially correspond to those to be formed in the tubular blank; effecting relative axial displacement of the centre mandrel and blank and a die assembly comprising a ring of toothed wheels which extend radially of the longitudinal axis of the centre mandrel and are rotatably mounted in a common holder with the axes of rotation of the toothed wheels disposed in a common radial plane of the longitudinal axis of the centre mandrel, the circular pitch of the teeth of each wheel being equal to the linear pitch of the corrugations of the centre mandrel, such that the relative axial displacement of the centre mandrel and the die assembly causes progressive formation of transverse corrugations in the interposed tubular blank as successive teeth of each of the wheels index with successive corrugations of the centre mandrel with a rack and pinion action; effecting collapse of the segmental centre mandrel and removing the resulting transversely corrugated tubular member from the collapsed centre mandrel.

3,852,988

MACHINE FOR MARKING IDENTIFICATION MARKS ON BILLETS, BLOOMS AND SLAGS

Dinesh Chandra Singhal, 5, North Ciruit House Area, Bihar, India

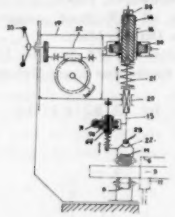
Filed June 5, 1973, Ser. No. 367,247

Int. Cl. B21b *45/00*

U.S. Cl. 72—197 **3 Claims**

1. A marking machine for stamping identification mark on a billet, bloom or slab as the billet, bloom or slab advances across a cooling bed, said machine comprising a pre-loaded main vertical spindle, a marking roll rotatably mounted in a swivel head, a swivel pin connecting said swivel head to said vertical spindle, a clevis connected to said head, a vertical swivel bolt mounted at its lower end in said clevis, a block rigidly connected to said main vertical spindle, said swivel bolt

passing freely through said block, an upper tension spring and a lower tension spring around said swivel bolt on either side of the said block so that when the said swivel head is inclined in one direction due to contact of the marking roll with the



inclined surface of the billet to be marked, then one of the said springs is compressed while the other spring is correspondingly relieved thereby enabling the swivel head to incline itself to cause the marking roll to have uniform contact with the billet to be marked.

3,852,989

METHOD OF APPARATUS FOR COOLING HIGH-TEMPERATURE METAL BARS

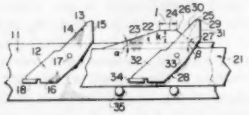
Toshio Harada, Kisarazu; Jinichi Akayama, Kitakushu; Masanori Yokozeki, Kisarazu; Toshihiro Ishimura; Shinji Nagano, both of Kimitsu; Hiroshi Wakuda; Kazuhiko Shimomura, both of Kitakyushu, and Akira Matsunami, Kimitsu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 15, 1973, Ser. No. 332,755

Claims priority, application Japan, May 23, 1972, 4.'-50884

Int. Cl. B21b *43/10*

U.S. Cl. 72—201 **11 Claims**



1. A method of cooling metal bars heated to a high temperature comprising placing the bars on a cooling bed in groups of bars which are spaced from each other, each group consisting of a plurality of bars with the sides of the bars in each group being in close contact with the adjacent bars in the group, transporting the groups on the cooling bed in a direction transverse to the axes of the bars in intermittent movements while maintaining the spacing between the groups and keeping the bars in the groups in close contact with each other, at the end of each movement turning the bars around their axes while continuing to keep them side by side in the groups in close contact with each other, and subjecting the bars to a cooling medium during such alternate transporting and turning over.

3,852,990

PROCESS FOR REMOVING SURFACE DISTORTION FROM A METAL ARTICLE

Kenneth P. Sparling, Burbank, Calif., assignor to Lockhead Aircraft Corporation, Burbank, Calif.

Filed Aug. 6, 1973, Ser. No. 386,164

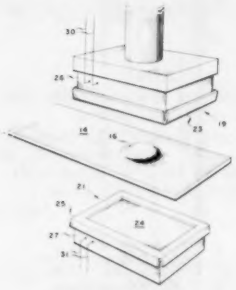
Int. Cl. B21d *1/06*

U.S. Cl. 72—342 **11 Claims**

1. A method for removing surface distortion from a metal article, the method utilizing a pair of opposed clamp members having a marginal region surrounding a recess between mating surfaces thereof comprising the steps of:

heating the opposed clamp members;

positioning the metal article between the heated clamp members;



closing the clamp members upon the metal article under a clamping pressure and such that, at least a portion of the surface distortion is positioned within the recess and caused to be heated to a pre-set value,

opening the clamp members; and

cooling the metal article.

3,852,991

BENDING PRESS

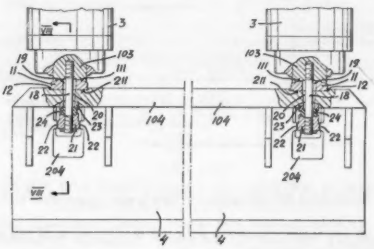
Sebastiano Poggio, Genova-Borzoli, Italy, assignor to Verrina S.P.A., Genoa-Voltri, Italy

Filed Sept. 13, 1973, Ser. No. 397,024

Claims priority, application Italy, Oct. 6, 1972, 12935/72

Int. Cl. B21d *5/02*

U.S. Cl. 72—389 **4 Claims**



1. A bending press with hydraulic overhead drive, comprising a frame, a stationery lower jaw secured to said frame, an upper jaw slidably mounted on the said machine frame for a vertical reciprocation motion with respect to the said lower jaw, a pair of lateral hydraulic thrust cylinders secured to the said machine frame and means for operatively connecting the piston rods of the said thrust cylinders to the said upper jaw so as to reciprocate said upper jaw to and from said lower jaw, whilst permitting to incline said upper jaw with respect to the lower jaw, said means comprising a tie rod coaxially secured by one end to the end of the piston rod of each thrust cylinder, a thrust element disposed between the said piston rod and a cross bar integral with and laterally projecting from the upper end of the said upper jaw, the said thrust element and the said cross bar being provided with borings through which the said tie rod is passed with lateral play, a spherical articulation head secured to the lower end of the said tie rod, the said articulation head being supported in a rotatable manner by the upper

jaw, and an engaging element coaxial to the said tie rod, disposed above the said articulation head and provided with a curved upper side into abutment with a correspondingly curved surface formed on the lower surface of the cross bar of the upper jaw.

3,852,992

THREAD-FORMING APPARATUS

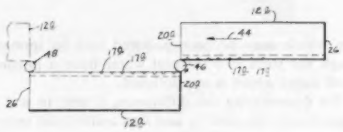
Yoshio Yamamoto, Kyoto, Japan, assignor to Research Engineering & Manufacturing, Inc., New Bedford, Mass.

Division of Ser. No. 126,447, March 22, 1971, Pat. No. 3,772,720. This application July 16, 1973, Ser. No. 379,848

Claims priority, application Japan, Apr. 11, 1970, 45-030970

Int. Cl. B21d *17/00*

U.S. Cl. 72—469 **10 Claims**



1. A die for use in cooperating with a companion die for rolling a thread on a screw of arcuate polygonal cross section from a blank of circular cross section, wherein said arcuate polygonal cross section has an odd number of thread-swaging lobes that any circumferentially separated by arcuate sides having longer radii of curvature than that of said lobes, said die having thread-forming projections conjugate to the profile of the thread to be rolled on a blank, said projections being inclined to the direction of travel of the die as it engages the blank by an angle equal to the helix angle of the thread to be rolled, and means on said die cooperable with companion means on said companion die for reshaping said blank of circular cross-section to a screw with said arcuate polygonal cross-section during the rolling operation, said means on said die comprising spaced apart grooves running transversely of said projections and perpendicular to said direction of travel.

3,852,993

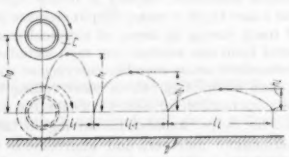
METHOD OF DETERMINING THE FRICTIONAL AND MECHANICAL PROPERTIES OF MATERIALS AND A DEVICE FOR THE REALIZATION THEREOF

Marat Alexandrovich Bronovets, Lefortowsky val, 7/6, korpus 4, kv. 32; Mikhail Nikolaevich Dobychin, Frunzenakaya neberezhnaya, 48, kv. 6; Igor Viktorovich Kragelsky, ul. Ivanovskaya, 26, kv. 2, all of Moscow, and Nikolai Matveevich Mikhin, Mikroraion Serebryanka, 6, kv. 34, Pushkino Moskovskoi oblasti, all of U.S.S.R.

Filed Aug. 1, 1972, Ser. No. 277,041

Int. Cl. G01n *3/52, 19/02*

U.S. Cl. 73—12 **13 Claims**



1. A method of studying frictional and mechanical properties of materials comprising the steps of striking the surface of a test specimen being studied against the surface of a reference specimen at a predetermined relative tangential speed corresponding to a predetermined type of friction; measuring the parameters of collision which are essential for determining the frictional and mechanical properties of the materials; allowing said test specimen and said reference specimen to carry out a number of successive rebounds; and measuring the parameters of rebound collisions to determine the coefficients of adherence, sliding friction and rolling friction as a function of the relative speed between said test specimen and said reference specimen.

3,852,994

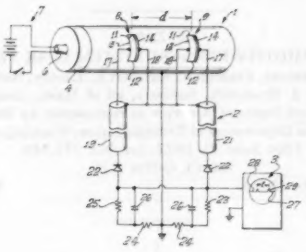
SLOT ANTENNA APPARATUS FOR MEASURING THE DETONATION OF AN EXPLOSIVE MATERIAL

Eugene F. Pereda, 11621 Hughes Ave. N.E., Albuquerque, N. Mex. 87112

Filed Jan. 2, 1974, Ser. No. 430,353

Int. Cl. C01l *5/14*

U.S. Cl. 73—35 **7 Claims**



1. Apparatus for measuring the detonation velocity of an explosive material comprising:

an elongate metallic tube closed at one of its ends and open at the other, said tube being provided with at least a pair of transversely-disposed slots spaced a fixed distance longitudinally of the tube,

means provided at said closed end for mounting explosive material,

means for detonating said material to produce a detonation wave travelling lengthwise within the tube,

each slot of said tube being capable of converting electromagnetic radiation present in said travelling detonation wave into an electrical signal output,

means for displaying said signal outputs and,

circuit means conductively coupling each of said slots to said display means,

the time required for said detonation wave to travel the fixed distance between said slots being ascertainable from said display means whereby the velocity of said travelling detonation wave can be determined.

3,852,995

METHOD AND APPARATUS FOR DETECTING LEAKS IN CONTAINERS

Robert H. Duncanson, Hennepin, Minn., assignor to Faberge, Incorporated, New York, N.Y.

Filed Feb. 23, 1973, Ser. No. 335,035

Int. Cl. G01m *3/16*

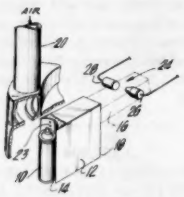
U.S. Cl. 73—40 **13 Claims**

1. A method of detecting for leaking containers comprising the steps of:

positioning the container adjacent a pair of spaced electrodes;

applying an electric field to the electrodes sufficient to maintain a corona about one electrode with small, erratic current flow between the electrodes;

directing a stream of substantially pure air past the container and between the pair of electrodes, the stream of substantially pure air conveying any organic molecules present on and adjacent the exterior surface of the container between the pair of spaced electrodes causing a greater, more constant flow of current between the pair of spaced electrodes; and



detecting any resulting greater, more constant current flow to indicate a leaking container.

3,852,996

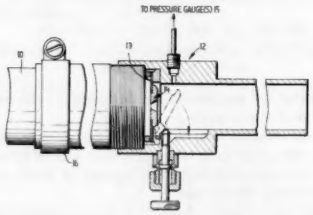
AUTOMOTIVE EXHAUST SYSTEM LEAK TEST

Earl C. Klaubert, Lexington; Adelbert L. Lavery, Natick, and Anthony J. Broderick, Sudbury, all of Mass., assignors to The United States of America as represented by the Secretary of the Department of Transportation, Washington, D.C.

Filed June 22, 1973, Ser. No. 372,749

Int. Cl. G01m *3/28*

U.S. Cl. 73—40.5 R **4 Claims**



1. In a constant mass input fluid flow system, a method of quantitatively determining leaks in the system with a pair of different sized orifices interchangeably connectible in a flowmeter at the output of the flow system, comprising the steps of:

measuring the pressure drop ΔpL across the larger sized orifice connected in the flowmeter,

interchanging the smaller sized orifice with the larger sized orifice and measuring the pressure drop ΔpS across the smaller sized orifice connected in the flowmeter,

deriving the ratio R of the pressure drops across the larger and smaller sized orifices, $R = \Delta pS/\Delta pL$, and

determining from the ratio R and the pressure drop ΔpL across the larger sized orifice the effective total leakage area of the system.

3,852,997

METHOD AND APPARATUS FOR MONITORING POLLUTION OF NATURAL WATERS

Robert Horvath, Plymouth, Mich., assignor to Environmental Research Institute of Michigan, Ann Arbor, Mich.

Filed Feb. 9, 1973, Ser. No. 331,300

Int. Cl. G01n *25/00*

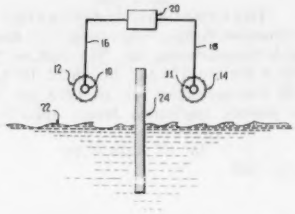
U.S. Cl. 73—61.1 R **14 Claims**

9. Apparatus for monitoring natural waters which are subject to sources of pollution in the form of surface slick, comprising in combination:

a first temperature sensor having wettable covering means;

a second temperature sensor having wettable covering means;

means for wetting the covering means of said first and second temperature sensors respectively by immersion through the surface of liquid from a portion of natural water which may become polluted and by immersion through the surface of natural water from a portion of natural water which is not polluted;



means for determining the difference, if any, in wet bulb temperatures indicated by said first and second temperature sensors.

3,852,998

SPEED CHANGING MECHANISMS

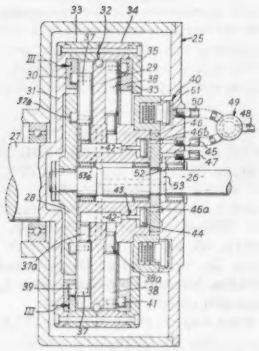
Patrick George Leeson, 20 Patch Ln., Bramhall, Stockport, England

Filed Jan. 17, 1973, Ser. No. 324,406

Claims priority, application Great Britain, Jan. 22, 1972, 3126/72

Int. Cl. F16h *25/14*

U.S. Cl. 74—63 **5 Claims**



1. A speed changing mechanism of the kind comprising three principal members, namely a rotary input member formed with a cam track; a rotary output member formed with a recessed track having an array of identical track sections evenly spaced from one another and each including a recess, and an intermediate rotary member carrying an array of identical units each comprising one or more rolling bodies; and hydraulically operated drive means between the intermediate member and the output member for driving the latter relative to the intermediate member, and wherein the mechanism further comprises, on at least one of the said principal members of the mechanism, control means for rotating the intermediate member in rotation at a controlled rate so as to vary the speed of the output member for a given input speed and hence the transmission ratio between the input and output members of the mechanism, said control means comprising

hydraulic fluid supply means comprising pistons carried by each of said rolling body units, the pistons being slidable in cylinders in the intermediate member as the rolling body units perform their linear motion, whereby a pulsating supply of hydraulic fluid is delivered to the drive means as the rolling body units reciprocate.

3,852,999

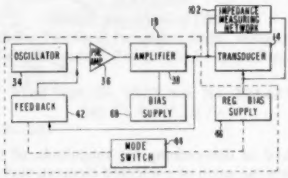
IMPEDANCE MEASURING NETWORK

Loren G. Wright, Alameda County, Calif., assignor to Uthe Technology, Inc., Mountain View, Calif.

Division of Ser. No. 888,330, Dec. 29, 1969, Pat. No. 3,636,456. This application June 10, 1971, Ser. No. 151,965

Int. Cl. G01m *7/00*

U.S. Cl. 73—67.1 **3 Claims**



1. Apparatus for driving and testing the operation of an ultrasonic transducer comprising

a constant current or constant voltage power supply for driving an ultrasonic transducer for application to a load, circuit means for rectifying, integrating and amplifying transducer coil voltage as a signal that is an analog of the transducer and load impedance, and

means for displaying said signal.

3,853,000

STRAIN MEASURING TRANSDUCER

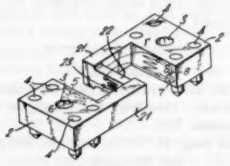
John David Barnett, and George Brian Barlow, both of Stockport, England, assignors to Peak Components Limited, Chesire, England

Filed Feb. 18, 1972, Ser. No. 227,529

Claims priority, application Great Britain, Feb. 23, 1971, 5172/71

Int. Cl. G01b *7/18*

U.S. Cl. 73—88.5 R **4 Claims**



1. A strain measuring apparatus comprising:

1. at least one resistance strain gauge;

2. a resilient neck on which said gauge is mounted;

3. a pair of spaced apart rigid blocks integrally connected to said neck, said neck extending between said rigid blocks in a direction transverse to a line joining the mid points of said rigid blocks;

4. a plurality of pins firmly affixed to each block, whereby said rigid blocks can be fastened securely to the surface of a structure the strain in which is to be measured;

5. a case enclosing said resistance strain gauge, said neck, and said pair of rigid blocks, said case having holes therein through which said pins extend; and

6. a moisture-repelling, resilient insulating material filling the remainder of said case not occupied by said resistance strain gauge, said neck, and said pair of rigid blocks,

whereby a strain between said rigid blocks causes a bending stress in said neck, and, since any strain between said rigid blocks is very much smaller than the length of said neck, the deflection of said neck is substantially linear and can be measured with great accuracy and sensitivity by said resistance strain gauge.

3,853,001

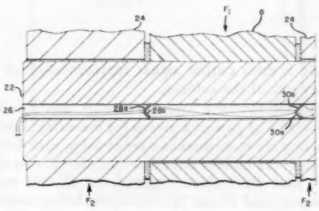
CRANE LOAD MEASURING MEANS

Thomas M. Mock, Tacoma, Wash., assignor to American Hoist & Derrick Company, Saint Paul, Minn.

Continuation-in-part of Ser. No. 271,413, July 13, 1972, abandoned. This application June 7, 1973, Ser. No. 367,706

Int. Cl. G01l *5/00*

U.S. Cl. 73—133 R **4 Claims**



1. In a crane system having a boom pivotably mounted about a horizontal axis to a main frame, a back stay for stabilizing the boom and having a relatively fixed force to counteract any moment generated by a load carried by the boom tending to overturn the crane means for detecting an overturn condition, comprising:

horizontally disposed hinge pin means interconnecting the boom and the framework,

core means secured within the hinge pin and

transducer means carried by the core means in the pin between the frame and the boom to respond to the single component of a moment tending to overturn as reflected in the force at the hinge pin to the exclusion of essentially all other forces, whereby the overturn moment is accurately reflected irrespective of the angle of the boom or the actual weight being lifted, relieving the operator from making a plurality of measurements or comparisons.

3,853,002

VEHICULAR PERFORMANCE ANALYZER

Gordon H. Peck, Las Cruces, N. Mex., assignor to Autotronic Controls Corporation, El Paso, Tex.

Filed Aug. 6, 1973, Ser. No. 386,108

Int. Cl. G01m *15/00*

U.S. Cl. 73—133 R **5 Claims**

1. Performance analyzer for measurement of the performance characteristics of a vehicle comprising:

a tachometer circuit means connected to the vehicle which produces a first electrical output signal of a frequency which is proportional to the velocity of the vehicle;

said tachometer circuit means includes a signal conditioner and monostable multivibrator; said signal conditioner being connected to provide said monostable multivibrator with trigger pulses of current;

a differentiator circuit means connected to said first output signal for providing a second output signal which is representative of the rate of change of said first output signal;

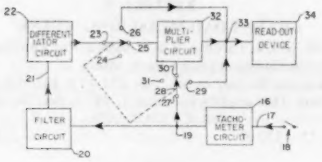
said differentiator circuit means includes a filter circuit, a differentiator, and an amplifier; said filter circuit being connected to said monostable multivibrator which converts the last said signal to a direct current wherein the direct current is proportional to the frequency of said first signal;

said direct current being connected to said differentiator by a source follower means for improving the response rate of said filter and said differentiator;

a multiplying circuit means including a transistor which multiplies said first and second output signals together to provide a third output signal representative of the net horsepower of the vehicle;

said transistor having a base, an emitter, and a collector;

a single source of power, a means for mesuring; said transistor having the base thereof connected to said first electrical signal, the emitter connected to said second electrical signal, and the collector connected to said means for measuring; said means for measuring being connected to said single source of power, so that current flow occurs from said power source, through said means for measuring, and to the collector of the transistor.

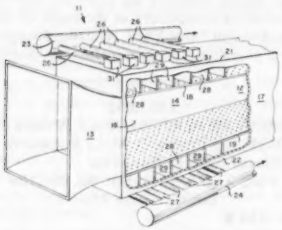


3,853,003

WIND TUNNEL FLOW GENERATION SECTION

Norman E. Sorensen, Saratoga, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed July 13, 1973, Ser. No. 379,019
Int. Cl. G01m 9/00
U.S. Cl. 73—147 **7 Claims**



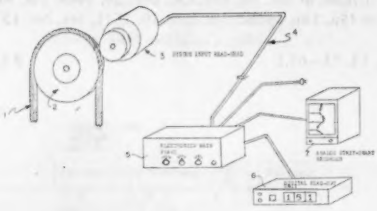
1. In the flow generation section of a high velocity wind tunnel, apparatus for generating improved flow over a range of flow velocities comprising a pair of generally opposed, porous wall surfaces defining a flow throat of said flow generation system, means for applying a negative pressure to the exterior sides of said porous wall surfaces, means for selectively varying the length of said wall surfaces in the direction of flow thereby to which said negative pressure is applied, and means for selectively varying the amount of said negative pressure.

3,853,004

METHODS AND SYSTEMS FOR MEASURING, DISPLAYING AND RECORDING TIME-RATE OF PENETRATION

John Henry Westlake; John Wallace Snyder; Clifford Harvey Leach, and Steve Edward Cebuliak, all of Calgary, Alberta, Canada, assignors to Eastman Oil Well Survey Company, Houston, Tex.

Filed Oct. 20, 1971, Ser. No. 190,881
Int. Cl. E21b 45/00
U.S. Cl. 73—151.5 **9 Claims**



1. A method of determining the magnitude of the linear movement into the earth of a selected element, such as a drill bit, on a drill string which is supported by means vertically movable within a derrick, wherein transient, random linear movement of the drill string does not produce substantial error in the determination, including the steps of:

transducing the linear movement of the drill string into rotary motion;

transducing such rotary motion into a set of electrical signals which cumulatively present binary coded words indicative of the direction and angular displacement of the rotary motion,

the binary coded words being presented in a selected and repetitive sequence so long as the rotary motion is caused by the downward movement of the drill string;

monitoring continuously the binary coded words being presented;

producing a count of the binary coded words so long as such binary coded words are presented in the repetitive, selected sequence and not producing a count of the binary coded words when they are not presented in the repetitive, selected sequence; and

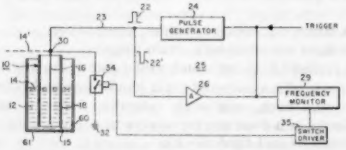
once the binary coded words have ceased to be presented in the repetitive, selected sequence, not producing a count of the binary coded words, even when they are again presented in the repetitive, selected sequence, until the last binary coded word previously counted has again been presented.

3,853,005

INTERFACE MEASURING APPARATUS

Robert E. Schendel, Houston, Tex., assignor to Measurand Systems, Houston, Tex.

Filed Aug. 29, 1973, Ser. No. 392,849
Int. Cl. G01f 23/28
U.S. Cl. 73—290 R **2 Claims**



1. In an apparatus for measuring the location of an unknown interface separating two media having different dielectric

constants, a transmission line positioned across said interface, a switch connected between ground and a reference interface on the center conductor of said transmission line, a signal generator for generating a fast rising output pulse which is reflected from the unknown interface when the switch is open and which is reflected from the reference interface when the switch is closed, the improvement comprising:

a switch driver for closing and opening said switch,

a frequency monitor for measuring the frequency of the pulses reflected from said reference interface and for measuring the frequency of the pulses reflected from said unknown interface, to thereby obtain a measurement of said unknown interface, and

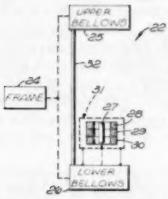
means coupling said frequency monitor to said switch driver to automatically open said switch after measurement of said reference interface.

3,853,006

FLUID SENSING SYSTEMS

Victor Nicholas Lawford, Pasadena, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sept. 29, 1972, Ser. No. 293,657
Int. Cl. G01f *23/14*
U.S. Cl. 73—301 **2 Claims**



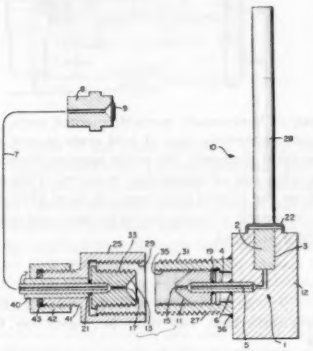
1. A reservoir liquid level system, said system comprising: a tank to hold a fluid; first and second means fixed relative to said tank in positions inside thereof at the top and bottom thereof, respectively, said first and second means including first and second hollow shells, respectively, having first and second movable diaphragms, respectively, each of said first and second shells being sealed but having one opening thereinto; a first conduit having a first end sealed through the opening in said first shell and a second end sealed through the opening in said second shell, said first and second diaphragms being depressible in accordance with the pressure at the respective upper and lower locations thereof; a first incompressible fluid filling said first conduit and both of said first and second shells; third means connected from one of said first and second diaphragms to produce an electrical output signal directly proportional to the difference between the pressures at the respective locations of said first and second diaphragms; fourth and fifth means fixed relative to said tank in positions adjacent the bottom of said tank, said fourth means being located above said fifth means and below said first means, said fourth and fifth means including fourth and fifth hollow shells, respectively, having fourth and fifth movable diaphragms, respectively, each of said fourth and fifth shells being sealed but having one opening thereinto; a second conduit having a first end sealed through the opening in said fourth shell and a second end sealed through the opening in said fifth shell, said fourth and fifth diaphragms being depressible in accordance with the pressure at the respective depths thereof; a second incompressible fluid filling said second conduit and both of said fourth and fifth shells; sixth means connected from one of said fourth and fifth diaphragms to produce an electrical output signal directly proportional to the difference between the pressures at the respective depths of said fourth and fifth diaphragms; a divider connected from the outputs of said third and sixth means for producing an output signal of a magnitude directly proportional to the ratio of the magnitude of the output signal of said third means to the magnitude of the output signal of said sixth means; and utilization means connected from the output of said divider.

3,853,007

VOLUMETRIC MEASURING SYSTEM

Howard Randall Jaquith, Rushville, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Feb. 9, 1973, Ser. No. 331,270
Int. Cl. G01l *7/00*
U.S. Cl. 73—395 **10 Claims**



1. In a volumetric measuring system having a sealed envelope solidly-filled with substantially incompressible liquid,

wherein said envelope includes a sensing portion responsive to a condition for causing the internal pressure of said liquid to correspond to said condition,

wherein said envelope includes a signal portion responsive to said internal pressure for producing a signal corresponding to said internal pressure, and

wherein said envelope includes a capillary portion for transmitting internal pressure changes between said sensing and signal portions;

the improvement wherein said capillary portion has a thimble and a socket each forming a part of said capillary portion, and said socket and said thimble being forcibly interengaged for urging said thimble and socket into contact with each with such force as to strain the material thereof continuously throughout a given area of mutual contact, said thimble and socket each having a capillary passage having openings within said area and registering with one another for defining the thimble and socket parts of said capillary portion.

3,853,008

LIQUID SAMPLE SUPPLY APPARATUS

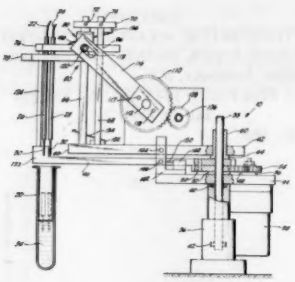
Jack L. Hoffa, Brea, and John J. Brown, Fullerton, both of Calif., assignors to Beckman Instruments Inc., Fullerton, Calif.

Filed Feb. 24, 1972, Ser. No. 228,905
Int. Cl. G01n *1/10*
U.S. Cl. 73—423 R **9 Claims**

1. A liquid sample supply apparatus for transferring two samples from a single container to two separate reaction cells simultaneously having a pair of vertically extending probes for insertion into the single container, means for lifting them vertically simultaneously, transporting them horizontally thereafter while horizontally separating them and thereafter positioning them over the horizontally separated reaction cells to discharge liquid drawn from the sample supply into said

horizontally separated reaction cells wherein the invention comprises:

two horizontally and vertically movable probe support elements, one pivoted to the other,



a pair of horizontally movable pivoted arms,

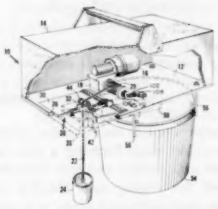
means connecting one of said arms to one of said probe support elements, the probe support elements each supporting one of said probes at an end of the element space from the pivotal joint between them whereby the probes are capable of horizontal separation and relative horizontal movement.

3,853,009

AUTOMATIC WATER SAMPLER

William Sutherland, 145 Monk St., North Bay, Ontario, Canada

Filed Oct. 25, 1972, Ser. No. 300,671
Int. Cl. G01n 1/10
U.S. Cl. 73—423 R **2 Claims**



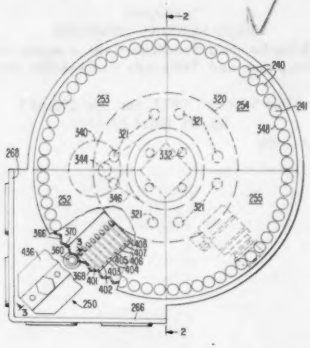
1. Apparatus for automatically collecting fluid samples from an effluent stream or the like and comprising in combination: a housing supportable above the stream; a sampling container having a closed bottom wall and side walls defining an open top; a supporting cable secured at one end thereof to said sampling container; a winch mounted on said housing, said supporting cable being wound at its opposite end about said winch; a reversible electric motor drivingly connected to said winch; a direct current power supply for said electric motor; a pair of vertically spaced electrodes defining liquid level sensing means, one of said electrodes being disposed adjacent the bottom within said sampling container and the other of said electrodes being spaced by a gap thereabove at a predetermined height defining a predetermined liquid level in said container, conductive liquid in said sampling container at or above said predetermined liquid level forming a conductive path aCross said gap and bridging said electrodes; and electric switching means responsive to said sensing means sensing a liquid level at said predetermined level at least to switch said motor in one direction for raising said sampling container towards said housing responsive to said predetermined level of liquid therein and switching said motor in the opposite direction lowering said sampling container responsive to a liquid level therein below said predetermined level; said electric switch means comprising a double-poled, double-throw reverse relay having its points connected in series with said motor and said power supply, said reversing relay having a coil energized by bridging of said electrodes by said conductive liquid.

3,853,010

SAMPLE CONTAINER SUPPORT WITH CODING MEANS

Urs Christen, Walnut Creek, and Dewayne Chester Guidinger, Concord, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

Filed Mar. 5, 1973, Ser. No. 337,801
Int. Cl. G01n 1/00
U.S. Cl. 73—423 **2 Claims**

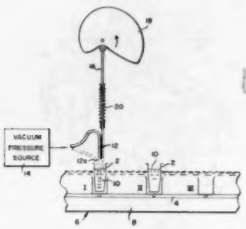


1. In a system for transferring a fluid from one of a plurality of containers to a fluid receiving device including a structure defining a station at which a fluid is removed from a container, a plurality of container supporting members each of which defines a plurality of fluid containers supporting locations, said container supporting members each having a lower face, actuation means for moving a selected container location of one of said container supporting members to said station, actuation means comprising a table member supported for rotation about an axis, said locations of said container supporting members being disposed circumferentially about said axis, connecting means detachably connecting said actuating means to respective ones of said container supporting members for enabling removal and replacement of respective container supporting members; and identification means comprising sensing means fixed with respect to said station and unique structure means movable with each said container supporting members and cooperable with said sensing means to determine the identity of each said container, THE IMPROVEMENT COMPRISING said unique structure movable with said container supporting members being defined by a series of permanent cam tracks supported by the lower face of said container supporting members, said cam tracks within a segment defined by the axis and said container location having raised portions corresponding to a number assigned said container supporting member and said container supporting locations, said raised portions being radially aligned with said corresponding container supporting location and said cam tracks being parallel to each other and concentric with the axis of rotation of said table member and said sensing means comprising a plurality of cam operated switches arranged parallel to each other on a radius from said table member axis to said station cooperating with said cam tracks to produce binary information identifying the sample container supporting location at said station, and identifying said container supporting member, said container supporting member being individually removable cylindrical segmental racks.

3,853,011
METHOD AND APPARATUS FOR THE SUCTION REMOVAL OF A LIQUID

Heinrich Baumann, Quellenweg 4, CH-4912 Aarwangen, Switzerland

Filed June 12, 1973, Ser. No. 369,195
Claims priority, application Switzerland, June 14, 1972, 8880/72
Int. Cl. G01n 1/14
U.S. Cl. 73—423 A 4 Claims

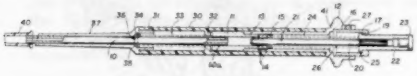


1. Apparatus for removing a quantity of liquid from a receptacle without contaminating the remaining liquid, comprising
a. a suction conduit having at one end an inlet orifice;
b. means supporting said suction conduit above the liquid contained in said receptacle with the inlet orifice spaced a given distance from the liquid level;
c. a source of suction pressure connected with the other end of said suction conduit, the pressure of said suction source being sufficient to establish a flow of liquid from said receptacle into the suction conduit via said inlet orifice; and
d. means for continuously lowering the inlet orifice end of said suction conduit at the same rate that the level of liquid in the receptacle decreases upon removal of liquid therefrom, thereby to maintain constant the spacing distance between the liquid level and inlet orifice, and the flow of liquid from said receptacle into said suction conduit via said inlet orifice, whereby the lower end and outer surfaces of the suction conduit are maintained free from contact with the liquid in the receptacle.

3,853,012
PIPETTES

Emil A. Scordato, Bronxville, and William C. Strobel, Bronx, both of N.Y., assignors to Medical Laboratory Automation, Inc., Mount Vernon, N.Y.

Filed Oct. 4, 1971, Ser. No. 186,023
Int. Cl. B01l 3/02
U.S. Cl. 73—425.6 17 Claims

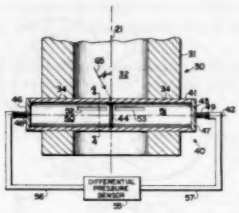


1. A manual pipette adapted to have a disposable tip wedge fitted at one end thereof and in co-axial relationship thereto, the arrangement being such that a disposable tip is secured to the pipette only by the frictional force of the wedge fit, said pipette comprising a de-tipping member for removing a disposable tip that is wedge fitted to the pipette, said member being slideably mounted on said pipette in a direction parallel to the axis of the pipette and movable between a normal position away from a disposable tip and a position where it engages the end of a disposable tip and thereafter pushes the tip in an axial direction to free it from frictional engagement with the pipette.

3,853,013
CONTROL APPARATUS

Werner H. Egli, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed July 2, 1964, Ser. No. 381,292
Int. Cl. G01p 3/26
U.S. Cl. 73—505 6 Claims



1. In an apparatus of the class described: a first element having an opening therethrough; a second element; cylindrical porous coupling means positioned between said first and said second element thereby maintaining said first and said second elements in a substantially parallel spaced relationship; an exit element having a passage therethrough positioned within said opening of said first element, the axis of said passage being coaxial with the axis of said coupling means and defining an input axis, the apparatus being adapted to be connected to a fluid source whereby a fluid flows through said coupling means, between said first element and said second element, and exhausts through said passage of said exit element; pickoff means including a cylindrical member symmetrical about a longitudinal axis, said member having a bore therethrough, said bore being partitioned substantially at its axial midpoint to form a first and a second fluid cavity, said member having a first elongated aperture therein substantially parallel to the longitudinal axis, said first aperture being in communication with said first fluid cavity, said member having a second elongated aperture therein substantially parallel to the longitudinal axis and substantially aligned with said first aperture, said second aperture being in communication with said second fluid cavity, said member being positioned within said passage with the longitudinal axis perpendicular to the input axis and the midpoint of said member being positioned upon the input axis, said first aperture and said second aperture being positioned at an angle of 45° with a plane containing the input axis and the longitudinal axis; a differential pressure sensor; and means connecting said first fluid chamber and said second chamber to said differential pressure sensor, the pressure differential between said first fluid chamber and said second chamber being indicative of the component of fluid flow within said passage perpendicular to the input axis of said apparatus.

3,853,014
IMPROVEMENT IN THE TRANSMISSION MECHANISM OF AN OSCILLATING ENGINE

Friedrich Munzinger, Hohenrandstrasse 46, 7 Stuttgart 80, Germany

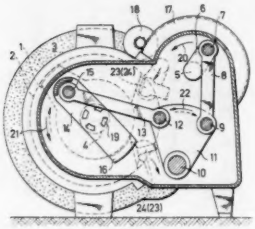
Filed Mar. 7, 1973, Ser. No. 338,652
Int. Cl. F16h 21/40
U.S. Cl. 74—70 7 Claims

1. An oscillating engine of the kind having a piston oscillating in a cylinder, the piston being connected to a piston shaft which rocks coaxially with the piston over an angular range of between 180° and 360°, said machine also having a crankshaft mounted with its axis parallel to that of the piston shaft in which are provided:
a piston crank rocking with the piston shaft,

a piston connecting rod hingedly connected to the piston crank,

a lever element to which said piston connecting rod is hinged,

a bearing supporting said lever element on a fulcrum axis spaced from the hinge point of said piston connecting rod,



a crankpin on said crankshaft,

a crankshaft connecting rod hinged at one end to said crankpin and at its other end to said lever element at an axis spaced from the fulcrum axis,

the phase relationship of the piston, the lever element and the crankshaft being such that the mid-point of the piston in its arc of oscillation corresponds with one dead-centre position of the piston crank and also with one dead-centre position of the crankshaft.

3,853,015

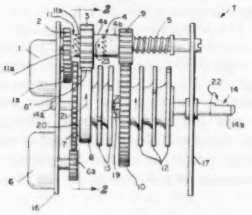
CONTROL DEVICES FOR SLOW AND FAST ADVANCEMENTS FOR ELECTROMECHANICAL TIMERS

Marcello Bertozzi, No. 47, Via Brighindi, and Mario Chioffi, No. 84, Via Marittima 1, both of Frosinone, Italy

Filed Dec. 3, 1973, Ser. No. 420,902

Int. Cl. F16h *27/00*

U.S. Cl. 74—112 **4 Claims**



1. A timing mechanism comprising a housing, a first shaft journaled for rotation in said housing, a first electric motor connected to said housing, a first cam means carried by said first shaft and rotatable by said first electric motor, a second electric motor connected to said housing and coupled for rotation of said first cam means at a faster rate than by said first motor through a first one-way clutch means, a second shaft carried by said housing, a second cam means rotatably carried on said second shaft and rotatable by said first electric motor at a faster rate than said first cam means, and a second one-way clutch means coupled between said first electric motor and said first cam means, whereby said first cam means may be rotated in one direction by manually turning said first shaft and allowing said second one-way clutch means to break coupling of said first cam means with said first and second motors.

3,853,016

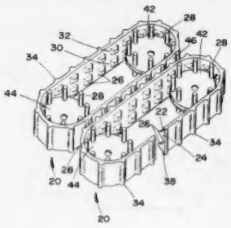
CROP GATHERING BELT

James Murray Lane, III, Denver, and Guy E. Lingenfelter, Broomfield, both of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 333,934, Feb. 20, 1973,. This application May 6, 1974, Ser. No. 467,240

Int. Cl. F16g *1/28;* **F16h** *7/02;* **A01d** *45/02*

U.S. Cl. 74—231 C **19 Claims**



1. A flexible crop gathering belt used in conjunction with at least one toothed pulley, said belt capable of cooperating with an oppositely facing endless belt to engage and gather crop including that of the cornstalk type, said belt comprising:

a first layer of flexible material extending longitudinally of the belt to define a driving portion thereof including a plurality of longitudinally spaced lugs adapted to mesh with teeth of the pulley, said lugs having a base portion;

a second layer of flexible material spaced from and generally parallel to said first layer to define a crop engaging portion, and;

a tensile section of high modulus material disposed between said first and second layers.

3,853,017

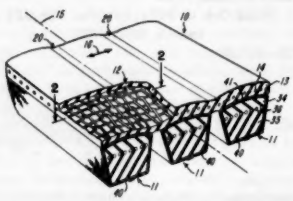
ENDLESS POWER TRANSMISSION BELT

Jack D. White, Jr., Springfield, and Joseph P. Miranti, Jr., Republic, both of Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Nov. 6, 1973, Ser. No. 413,293

Int. Cl. F16g *5/00, 1/22*

U.S. Cl. 74—234 **14 Claims**



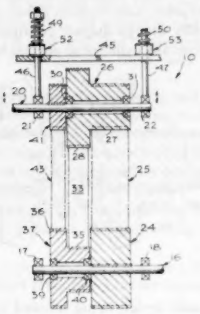
1. An endless power transmission belt comprising a plurality of laterally spaced belt elements and a tie band interconnecting said belt elements, said tie band being reinforced by a knitted layer which allows tie band extensibility between said belt elements in an infinite number of directions enabling efficient engagement of each element with opposed surfaces comprising a groove of an associated sheave even under adverse conditions with said knitted layer holding said elements together as a unitary construction substantially free of any tendency for said band to shear between said elements.

3,853,018

BELT DRIVE AND TENSIONING APPARATUS

Henry Folkert, Granger, Wash., assignor to Folkert, Inc., Granger, Wash.

Filed Oct. 9, 1973, Ser. No. 404,188
Int. Cl. F16h 7/10, 7/00
U.S. Cl. 74—242.13 A 6 Claims



1. A compact belt drive transmission with automatic belt tensioning comprising:

a first shaft rotatably journaled by first support means affixed to a frame means and adapted to be operatively connected to a source of input power;

a second shaft rotatably journaled by second support means and disposed in a spaced and generally parallel relationship to said first shaft and adapted to provide an output source of rotational power;

a first belt pulley carried by and affixed to said first shaft means;

a second belt pulley carried by and affixed to said second shaft means;

belt means operatively interconnecting said first belt pulley and said second belt pulley whereupon the application of a rotational source of power to said first shaft, said second shaft will rotate at a speed relative to said first shaft and directly proportional to the ratio between said first belt pulley and said second belt pulley;

at least one elongated member attaching said second support means to said frame means, said elongated member being in a generally planar alignment with said belt means and extending in an opposite direction thereto and spring bias means affixed to said elongated member and urging said member upwardly with a force sufficient to maintain proper tension on said belt means irrespective of wear and stretching of said belt means when the transmission is at rest; and

stop means cooperatively engaging said elongated member preventing said member from moving downward when the transmission is operative and a downward force greater than the force of said spring bias means is applied to said second shaft.

3,853,019

TRANSMISSION SHIFTING MECHANISM

Paul F. McAdams, Saint Joseph, Mich., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Mar. 21, 1973, Ser. No. 343,568
Int. Cl. G05g 9/06
U.S. Cl. 74—473 R 18 Claims

1. Shifting mechanism for use with a transmission having

a. forward, neutral and reverse conditions and a shift valve for controlling those conditions, and

b. a plurality of speed ratio conditions and a shift valve for controlling those conditions,

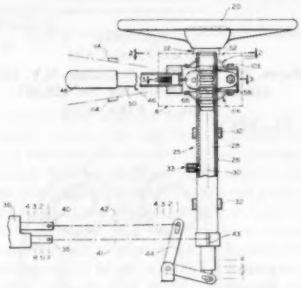
the combination comprising,

a shifting column including an outer sleeve and a center shaft,

means mounting the outer sleeve for oscillation but against axial movement, and linkage operatively connecting it with the (a) shift valve for actuating the latter in response to oscillation of the outer sleeve,

means mounting the center shaft in the outer sleeve for axial reciprocation therein, and linkage operatively connecting it with the (b) shift valve for actuating the latter in response to reciprocation of the center shaft, a shifting lever, and means mounting it on the shifting column,

the shifting lever being swingable in a first sense about the axis of the shifting column and operative, in response to swinging movement in that sense and acting through



its own mounting means, for oscillating the outer sleeve,

the shifting lever also being movable in a second sense in a plane containing the axis of the shifting column, from a center position in actuating direction,

means forming releasable interconnection between the shifting lever and the center shaft for reciprocating the center shaft in response to moving the shifting lever in its said second sense,

means limiting movement of the shifting lever in its said second sense from said center position in actuating direction an amount corresponding to movement of the (b) shift valve between consecutive and adjacent speed ratios, and

means operative for releasing the connection between the shifting lever and the center shaft in moving the shifting lever in return to its center position.

3,853,020

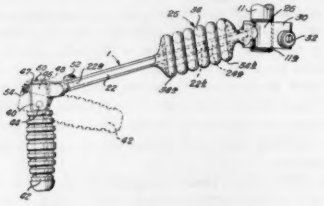
FLEXIBLE MOTORCYCLE GEARSHIFT

Hiram Daniel Clark, III, 1129 Lakeview, Mesquite, Tex. 75149

Filed Jan. 11, 1973, Ser. No. 322,904
Int. Cl. G05g 1/14
U.S. Cl. 74—560 9 Claims

1. A motorcycle gearshift lever adapted to rotate a shaft comprising: a first member having an inner end and an outer end; connector means to secure the inner end of said first member to the shaft; means to prevent rotation of said connector means relative to said shaft; a second member having an inner end and an outer end; an elastic coupling extending about the outer end of the first member and about the inner end of the second member; means to secure one end of said

elastic coupling to the first member; means to secure the other end of the elastic coupling to the second member; an arm; and

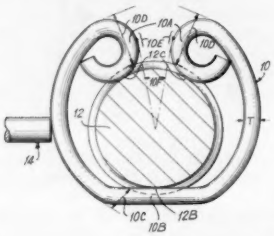


means to secure the arm to the other end of the second member.

3,853,021
GRIPPING CAM

Roger Hayes, 260 Garth Rd., Scarsdale, N.Y. 10583

Filed Dec. 26, 1973, Ser. No. 428,057
Int. Cl. F16h *53/00*
U.S. Cl. 74—568 R **8 Claims**



1. A ring, formed of spring wire and mounted in a groove around a shaft, adapted for stopping the movement of a member movable towards and away from said ring on said shaft, said ring having a pair of opposed ends defining an opening in the periphery of said ring, and at least three locations for contacting and gripping said shaft in said groove to prevent axial movement of said ring with respect to said shaft and to establish a gripping force around said shaft to prevent free rotation of said ring around said shaft, at least one of said ends having a loop for providing a region to receive rotational force to overcome said gripping force and thereby to rotate said ring, said periphery of said ring defining a variable radial height dimension of said ring above said shaft when said ring is mounted on said shaft, said ring having a plurality of external contacting regions corresponding to said variable radial height dimension for limiting the movement of said movable member towards said periphery of said ring and towards said shaft, the selection of said contacting region of said ring for stopping said movable member being variably determined by the rotational position of said ring with respect to the path of said movable member in said movement towards said periphery of said ring.

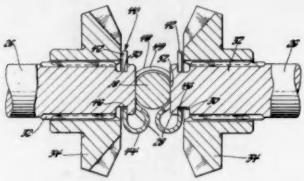
3,853,022
DIFFERENTIAL MECHANISM

Morris J. Duer, Lansing, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 24, 1973, Ser. No. 409,333
Int. Cl. F16h *1/40*
U.S. Cl. 74—713 **1 Claim**

1. In a differential mechanism including a rotatable casing, a pair of output members rotatably received in said casing and adapted to be driven thereby, a gear train comprising intermeshing gears rotatably carried in said casing and interconnecting said output members and said casing, said gear train also comprising a pinion shaft fixedly carried in said housing, the improvement comprising:

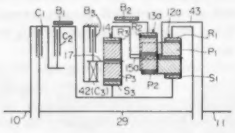
an output member retaining device in said casing, said device comprising a pair of parallel flat plates and a resilient center plate joining a corresponding side of each said parallel plate, said resilient center plate being curved in a generally omega-shaped configuration to form an unclosed generally cylindrical portion between said parallel plates, said device being located in said casing with said cylindrical portion surrounding said pinion shaft, said cylindrical portion having at least one opening through the wall thereof whereby said output members may be biased against said pinion shaft, each of said parallel plates having a slot extending inward from the side thereof opposite said resilient center plate, said slots being adapted to engage said output members, said resilient center plate being extended to bias said output members inward against said pinion shaft and thus positively retain said output members within said casing and limit lateral movement of said output members.



3,853,023
GEAR TRAIN ARRANGEMENTS

Yoichi Mori, Yokohama; Nobuo Okazaki, Chigasaki; Kunio Ohtsuka, and Tetsuya Iijima, both of Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Division of Ser. No. 30,496, April 21, 1970, Pat. No. 3,701,293. This application Sept. 13, 1972, Ser. No. 288,548
Claims priority, application Japan, Apr. 30, 1969, 44-32684
Int. Cl. F16h *57/10*
U.S. Cl. 74—759 **1 Claim**



1. A gear train comprising:

1. an input shaft (**10**);
2. an output shaft (**11**);
3. a first planetary gear set (**12***a*) having a ring gear (R_1), a pinion carrier (**15***a*) carrying planet pinion (P_1) meshing with the ring gear (R_1) and a sun gear (S_1) meshing with the planet pinion (P_1), the pinion carrier (**15***a*) thereof being connected to said output shaft;
4. second planetary gear set (**13***a*) having a ring gear (R_2) and a planet pinion (P_2) carried by the pinion carrier (**15***a*) of said first planetary gear set (**12***a*), said ring gear (R_2) meshing with the planet pinion (P_2) of said second planetary gear set, the planet pinion (P_2) of said second

planetary gear set meshing with the planet pinion (P_1) of said first planetary gear set (12*a*);

5. A third planetary gear set (14) having a ring gear (R_3) connected to the pinion carrier (15*a*) of said first planetary gear set, a pinion carrier (17) carrying a planet pinion (P_3) meshing with the ring gear (R_3) thereof and a sun gear (S_3) meshing with the planet pinion (P_3) thereof, the sun gear (S_3) thereof being connected to the sun gear (S_1) of said first planetary gear set;

6. first clutch means (C_1) for engaging said input shaft with the ring gear (R_1) of said first planetary gear set during operation of first, second, third, and fourth forward speeds;

7. second clutch means C_2 for engaging said input shaft (10) with the sun gears (S_1, S_3) of said first and third planetary gear sets during fourth forward speed and reverse speed;

8. first brake means (B_1) for anchoring the sun gears (S_1, S_3) of said first and third planetary gear sets during third forward speed;

9. second brake means (B_2) for anchoring the ring gear (R_2) of said second planetary gear set during second forward speed;

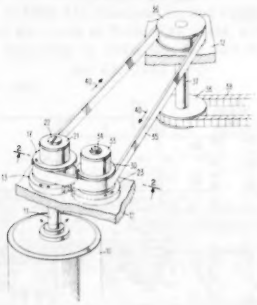
10. third brake means (B_3) for anchoring the pinion carrier (17) of said third planetary gear set during reverse speed; and

11. one-way brake means (42(C_3)) for preventing the pinion carrier (17) of said third planetary gear set from rotating in a direction opposite to the rotation of said input shaft (10).

3,853,024
TWO SPEED DRIVE SYSTEM FOR PRINT MECHANISM OR THE LIKE

Anthony Vesci, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,849
Int. Cl. F16h *5/52*
U.S. Cl. 74—812 **6 Claims**



1. A two-speed unidirectional drive system comprising

a single-speed reversible motor with an output shaft,

a first drive gear and a first drive pulley concentrically supported on said output shaft,

a first free-wheeling clutch mechanism coupling said first drive pulley in a first rotational direction to said output shaft,

an idler shaft parallel with said output shaft,

a second drive gear and a second drive pulley concentrically supported on said idler shaft in coplanar relation with said first drive gear and said first drive pulley respectively,

said second drive gear having a driving connection with said first drive gear,

a second free-wheeling clutch mechanism coupling said second drive pulley in said first rotational direction to said idler shaft,

said first and second drive gears or said first and second drive pulleys or both being a different size whereby a dual speed unidirectional rotation of various ratios is obtained a driven shaft parallel with said output and said idler shaft,

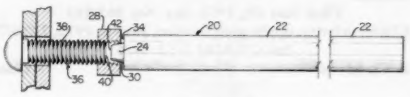
a driven pulley fixedly coupled to said driven shaft,

and a drive belt connecting said first and second drive pulley and said driven pulley.

3,853,025
NUT STARTER

Walter D. Komhyr, 70 Manhattan Dr., Boulder, Colo. 80303

Filed Sept. 25, 1972, Ser. No. 292,081
Int. Cl. B25b *13/48*
U.S. Cl. 81—71 **18 Claims**

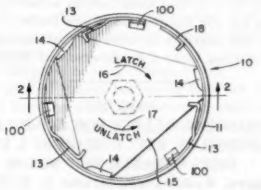


1. A nut starter tool adapted for starting a nut onto a threaded member wherein the nut has a threaded inner surface defining a substantially circular central opening extending therethrough between opposite end surfaces, said tool comprising an elongated body portion and a nut-gripping axial extension at a forward end thereof varying in cross-sectional size along its length and of a reduced cross-sectional size throughout with respect to that of said elongated body portion, said axial extension having a rounded leading end, and a shoulder portion between said body portion and said axial extension, said axial extension having a length substantially one-half the means diameter of said axial extension for insertion into the central opening of said nut and being adapted to frictionally engage a portion of the nut when inserted therein whereby the nut is releasably retained on said axial extension in a manner such that the nut can be started onto the threaded member by rotational movement of said body portion of said tool.

3,853,026
OIL FILTER REMOVING TOOL

Charles W. Rhodes, Victoria, Tex., assignor to Alfred L. Burden, Victoria, Tex.

Filed Feb. 4, 1974, Ser. No. 439,535
Int. Cl. B25b *13/28*
U.S. Cl. 81—91 R **10 Claims**



1. A hand tool for removal of oil filters and the like comprising a cup shaped latch carrying housing having an open end adapted to fit over one end of a filter to be removed, said housing including a cylindrical wall portion, latch means carried by the interior of said wall portion including a portion attached to the housing wall and having a resilient free portion extending along the wall and having a filter gripping portion extending inwardly therefrom, and rotatable latch actuating cam means adapted for engagement with the free end portion

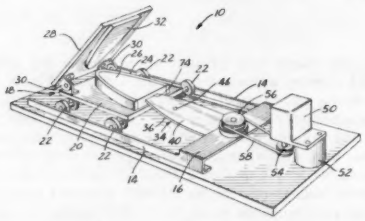
of said latch means to force the same into operative engagement with said filter, means rotatably mounting said cam means concentrically with the cylindrical wall of said latch carrying housing, and means for rotating said mounting means in one direction to bring the cam means into operative engagement with the latch means to engage said filter and to rotate said filter for removal from its seat and for rotating said mounting means in the opposite direction to disengage the cam means from the latch means.

3,853,027

APPARATUS FOR CUTTING RESILIENT POROUS MATERIAL

Rolf G. E. Karlstrom, and Leif A. Jansson, both of Eskilstuna, Sweden, assignors to Forenade Fabriksverken, Eskilstuna, Sweden

Filed May 25, 1973, Ser. No. 363,882
Claims priority, application Sweden, June 6, 1972, 7376/72
Int. Cl. B26d *3/12, 3/28*
U.S. Cl. 83—4 **4 Claims**



1. Apparatus for cutting a slit in a workpiece of resilient porous material to form a glove-like cover having upper and lower surfaces between which the slit is to be made, said apparatus comprising, in combination, a base plate, track means supported by said base plate, workpiece support means supported by said track means and including a carriage having means thereon to fixedly retain a workpiece of resilient porous material thereon preparatory to cutting a slit in an edge surface thereof, a generally flat cutting knife supported by said base plate, and means for longitudinally reciprocating said cutting knife, said track means and said carriage being cooperable so that said carriage is movable in a direction generally parallel to the longitudinal axis of said cutting knife to effect engagement of said reciprocating cutting knife with said edge surface of said workpiece when supported on said carriage such that a slit is cut in said workpiece intermediate the upper and lower surfaces thereof with the workpiece remaining integral along the peripheral portion of said slit opposite said edge surface, said cutting knife having a cutting edge of sufficient size to cut the desired slit in the resilient porous workpiece when said carriage is moved in said longitudinal direction of said cutting knife a predetermined distance.

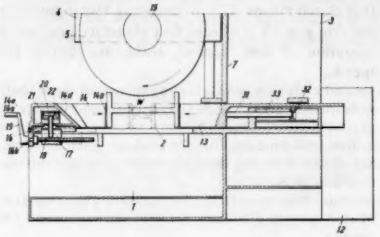
3,853,028

MECHANICAL DEVICE FOR COLD-SAWING STEEL-PROFILES, ETC. UTILIZING A VERTICAL DISPLACEABLE SAW BLADE

Leopold Jagers, Rudolf-Diesel-Strasse 1, 5350 Euskirchen, Germany

Filed May 23, 1973, Ser. No. 363,103
Claims priority, application Germany, May 24, 1972, 2225197
Int. Cl. B26d *7/02, 1/14, 33/45*
U.S. Cl. 83—461 **8 Claims**

1. An apparatus for sawing steel profiles by a vertically displaceable circular saw blade overlying a horizontal work bench, including combined clamp and stop assemblies disposed on opposite sides of the blade for engaging the work piece at the opposite side at the area in which a vertical cut is to be made, the improvement in which one combined clamp and stop assembly includes a vertical abutment face for engaging one side of the work piece, said blade being rotatable toward said face for urging the work piece thereagainst as a cut is effected, said stop assembly including means for adjustably rotating said vertical abutment face relative to the cutting plane of said saw blade and the cutting plane of the saw blade



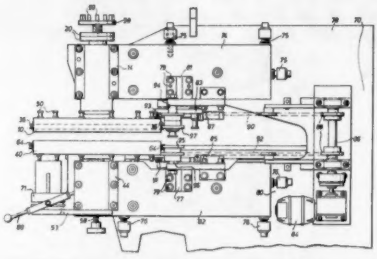
intersecting and passing through said vertical abutment face, said vertical abutment face including a circular segmental guide having a center coinciding with the abutment face, and an intermediate plate secured to the work bench and having arcuate guide means upon which said stop assembly is adjustably mounted.

3,853,029

TURRET PUNCHING MACHINES

Sidney Clarke Todd, Maidenhead, England, assignor to Pierce-All Manufacturing Limited, Slough, Buckinghamshire, England

Filed Aug. 6, 1973, Ser. No. 386,226
Int. Cl. B26f *1/04*
U.S. Cl. 83—552 **9 Claims**



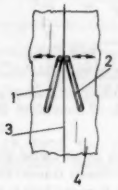
1. A turret punching machine having a main frame extending substantially at right angles to the front edge of the machine and formed with spaced upper and lower limbs, a spindle carrying a rotatable upper turret supported by the upper limb of the frame and a ram mounted in the frame for axial movement, the said turret and ram being so constructed and mutually disposed that the path of movement of the periphery of the turret lies at or adjacent the front edge of the machine, that the punches carried by the turret move in succession below the ram during rotation of the turret and that the ram is disposed coaxially with and above an extreme laterally disposed punch station of the turret when viewed from the front of the machine.

3,853,030

MODULATION MECHANISM FOR HARPS

Karl Petutschnigg, Messinggasse 14, A-9900 Lienz, Austria

Filed Apr. 24, 1974, Ser. No. 463,839
Claims priority, application Austria, May 11, 1973, 4167/73
Int. Cl. G10d *1/04*
U.S. Cl. 84—266 **2 Claims**



1. In a modulation mechanism disposed in the saddle of a harp and connected through angled hooks and sheet metal plates to lockable pedals, the operation of which shortens the vibrating string length by contact of the angled hooks on the strings according to the laws of tempered tuning, so that the tones of the tuned scale are raised by a semitone or a full tone, the improvement comprising:

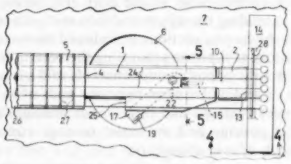
each angled hook is pivotally connected to said saddle at apposite with respect to the respective string, a pin fastened to said saddle and defining the shortened string length.

3,853,031

FLAT-TOP GUITAR ANTI-WARPING DEVICE

Herman W. DeWitt, 916 Chestnut St., and Connie E. Williams, 1180 Lytle Rd., both of Yuba City, Calif. 95991

Filed May 8, 1974, Ser. No. 467,962
Int. Cl. G10d *1/08*
U.S. Cl. 84—267 **10 Claims**



1. The method of releasing the tension of a set of tuned strings on a flat-top guitar having a sound hole in its top and a bridge at one side of said hole rigidly secured on said top to which one of the ends of said strings are secured, and a fingerboard rigid with said top having a terminal end facing said bridge at the side of said hole opposite the latter with the set of tuned and tensioned strings extending over said hole and supported by said bridge in a position spaced over said top and fingerboard, comprising the steps of:

a. applying an expanding force between said terminal end of said fingerboard and said bridge in the direction of the length of said strings in sufficient strength to relieve the tension transmitted from said set of strings by said bridge to said top and thereby transmitting said tension to said fingerboard;

b. said expanding force being applied in the direction of said strings; and

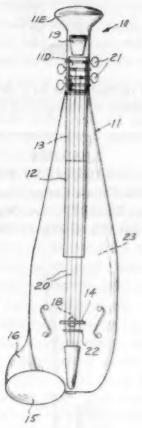
c. releasably holding said force in tension-relieving condition during the storage period when said guitar is not being played.

3,853,032

VIOLIN IN THE FORM OF A BASEBALL BAT

Harold Freeman, 164 Leonard Rd., Rochester, N.Y. 14616

Filed Mar. 11, 1974, Ser. No. 450,179
Int. Cl. G10d *1/02*
U.S. Cl. 84—275 **7 Claims**



1. A violin comprising:

a body having the general shape of a baseball bat including an enlarged end, a smaller end, and a tapered section connecting said enlarged and smaller ends;

a recessed section in said smaller end;

string tensioning keys mounted in said recessed section;

a hollow sound chamber in the interior of said enlarged end having a sound bar and a sound post connecting the top and the bottom of said chamber;

a bridge mounted on said enlarged end over said sound post;

a fingerboard attached to said smaller end, said fingerboard having a nut connected thereto adjacent said recessed section;

a tailpiece attached to said enlarged end;

and a plurality of strings tensioned between said tailpiece and said keys, said strings resting on said nut and said bridge and overlying said fingerboard.

3,853,033

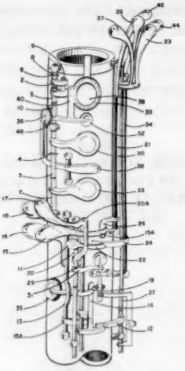
OBOE FINGERING SYSTEM AND MOUTHPIECE

Dick Paladino, 4221 San Bernadino Ave., Las Vegas, Nev. 89102

Division of Ser. No. 349,625, April 9, 1973, Pat. No. 3,789,721, which is a continuation-in-part of Ser. No. 234,481, May 15, 1972, abandoned. This application Nov. 15, 1973, Ser. No. 416,165
Int. Cl. G10d *7/00*
U.S. Cl. 84—380 **10 Claims**

1. In a lower portion of an oboe or English horn, a key arrangement comprising a cluster of four keys grouped to-

gether for depression by the right hand little finger, each one of said keys is operatively connected to means for displacing



a tone hole cover in response to key depression for sounding low C natural, B natural, C sharp and D sharp respectively.

3,853,034

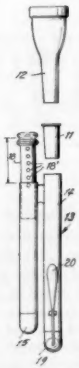
BRASS MUSICAL INSTRUMENT PRACTICE DEVICE

Raymond J. Vale, 6006 Forest Ledge, San Antonio, Tex. 78240

Filed Nov. 23, 1973, Ser. No. 418,780

Int. Cl. G09b *15/06*

U.S. Cl. 84—465 **3 Claims**



1. A brass musical instrument practice device comprising a length of tubing defining a volume and having a first end and a second end, a brass instrument mouth piece attached at said first end and a tubular valve mounted on said second end, said valve comprising a tube having a row of apertures spaced along the length of the tube, said tubular valve being closed at one end and opened at its opposite end, the opposite end of said valve being slideably mounted on said tubing whereby the apertures of said valve may be opened or closed.

3,853,035

GAS FIRED MACHINE GUN

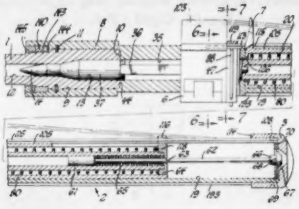
John S. Donovan, 16503 Santa Rosa, Detroit, Mich. 48221

Division of Ser. No. 191,297, Oct. 21, 1971, Pat. No. 3,766,096. This application May 25, 1973, Ser. No. 364,218

Int. Cl. F41d *9/02*

U.S. Cl. 89—33 C **6 Claims**

1. In a gun having a firing chamber, a retractable bolt for closing said chamber, means for feeding a belt of interlinked ammunition cartridges through the gun between the chamber and the bolt in retracted position, said means including elongated spring fingers extending longitudinally of the gun, having their rear ends fixed against transverse or longitudinal movement and means connecting the bolt to the forward ends



of the spring fingers so as to cause the forward ends of the spring fingers to be cammed transversely of the longitudinal axis of the gun by the bolt as the bolt is returned to its chamber closed position.

3,853,036

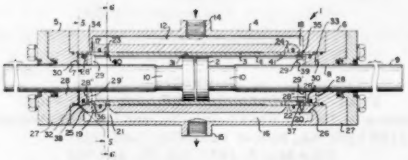
RECIPROCATING FLUID MOTOR

Wade A. Eskridge, 907 Ashbury Rd., Olathe, Kans. 66061, and Duane O. Kennedy, 353 N. 31st St., Kansas City, Kans. 66100

Continuation-in-part of Ser. No. 278,561, Aug. 7, 1972, abandoned. This application Aug. 20, 1973, Ser. No. 389,448

Int. Cl. F01l *17/00, 25/02*

U.S. Cl. 91—276 **10 Claims**



1. A fluid motor comprising:

a. a housing having a longitudinally extending bore therein, said housing having end closure members thereon and each having a secondary bore of reduced size therein;

b. a piston reciprocable in said bore and having elongated shafts extending therefrom and into said secondary bores, said shafts having sections of reduced diameter adjacent said piston; said piston separating the bore into respective chambers on opposite sides thereof, said piston having a stroke extending between opposite ends of said bore;

c. fluid inlet passages and fluid outlet passages and having an inlet passage and an outlet passage communicating with each of said chambers;

d. valve means having opposite end portions with end facing surfaces and being reciprocable in said bore and alternately movable in response to fluid pressure, said valve means being movable between a first position and a second position, said valve means in said first position communicating said respective inlet passage with one chamber while communicating the other chamber with said respective outlet passage thereby effecting movement of said piston in one direction, said valve means in said second position communicating said respective inlet passage with the other chamber while communicating the one chamber with said respective outlet passage thereby effecting movement of said piston in the opposite direction;

e. means in each of said closure members and said housing for communicating a space defined by the respective secondary bores and the section of reduced diameter of said shafts with said outlet passage for restricted flow

thereto when the piston is adjacent to and moving toward the respective closure member;

f. means operative in response to said reduced diameter shaft section entering a respective secondary bore to communicate fluid pressure from one of said inlet passages flow greater than said restricted flow to the outlet passage, said flow from said inlet passage being operative to apply force to the adjacent end facing surface of the valve means to effect movement thereof toward its other position.

3,853,037

PNEUMATIC HOLDING DEVICE

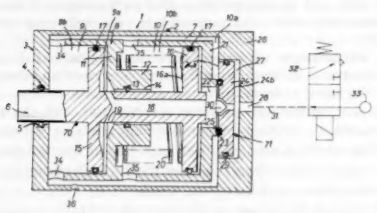
Emil Denzler, Spreitenbach, and Robert Widmer, Windisch, both of Switzerland, assignors to H. A. Schlatter A.G., Schlieren, Switzerland

Filed Mar. 29, 1972, Ser. No. 239,143

Claims priority, application Switzerland, Apr. 6, 1971, 5071/71

Int. Cl. F15b *11/08, 13/042*

U.S. Cl. 91—440 **2 Claims**



1. A pneumatic holding device, comprising: a cylinder having a first and an opposite second end;

a partition intermediate the ends of said cylinder dividing said cylinder into separate first and second piston compartments with said first compartment being the closer one to said cylinder first end;

a piston rod for supporting and guiding pistons, said piston rod extending through both said piston compartments toward said cylinder first and second ends;

a first and a second piston supported upon said piston rod and located, respectively, in said first and said second piston compartments of said cyliner; both said pistons being sealingly movable through the respective said compartments and each said piston thereby divides its respective said compartment; said pistons being spaced apart on said rod and being simultaneously movable by said rod; said pistons and said piston rod being shiftable axially through said cylinder toward said cylinder ends; both said pistons having a respective first face facing toward said cylinder first end and having a respective second face facing toward said cylinder second end; means normally biasing said pistons toward said cylinder first end;

a pressurized fluid inlet having a first cross section and being connected to said cylinder; a valve located between said pressurized fluid inlet and said cylinder; said valve having an inlet communicating with said fluid inlet and an outlet communicating with said cylinder; said valve outlet communicating into said cylinder first compartment at a location such that pressure may be applied through said fluid inlet to the said first face of said first piston; a pressure transmitting conduit communicating between said valve outlet and said cylinder second compartment at a location such that pressure may be applied through said fluid inlet to said first face of said second piston;

said valve comprising: a valve element compartment of a second cross section larger than said first cross section of said pressurized fluid inlet; a movable valve element in said valve element compartment, said valve element having a cross section such that it is sealably movable through said valve element compartment and being movable in said valve element compartment toward and away from said cylinder under the influence of pressure in said valve element compartment and in said cylinder; said valve element having a pressure inlet side facing toward said valve inlet and said fluid inlet and having a pressure outlet side facing toward said valve outlet and said cylinder;

a narrowed passage through said valve element extending across said valve element compartment to join said fluid inlet with said cylinder; a one-way check valve in said narrowed passage permitting only inlet to said cylinder through said narrowed passage;

said cylinder carrying a valve seat for said valve element against which said valve element pressure outlet side is sealable; when said valve element pressure outlet side, which said section has a third cross-section which is smaller than said valve element second cross-section and which said valve element section is exposed to the sections of said first and said second compartments and thereby is exposed to the cylinder pressure at said first side of both said pistons; with said valve element moved through its said compartment onto said valve seat, the entire said pressure inlet side of said valve element is exposed to the inlet pressure in said fluid inlet and in said valve element compartment;

a pressure equalization conduit connected to both said piston compartments in said cylinder at respective locations in said compartments such that said pressure equalization conduit is always at the pressure at both said piston second faces; said pressure equalization conduit also communicating with said piston compartments at respective locations so that it is in communication with said first sides of both said pistons; on the path between the piston compartment sides facing said second piston sides and the piston compartment sides facing said first piston sides, said equalization conduit passes said valve element and said valve seat, such that with said valve element on said valve seat, said equalization conduit is blocked, and with said valve element off said valve seat, said equalization conduit is open;

a cylinder housing surrounding and spaced from said cylinder and in which said cylinder is mounted and defining, between said cylinder and said cylinder housing, said equalization conduit in the form of a jacket compartment around the exterior of said cylinder;

said cylinder housing having opposed end faces; said valve means being in a valve housing formed at one end face of said cylinder housing surrounding said cylinder; the other end face of said cylinder housing having a guide opening for said piston rod and said piston rod passing through said guide opening therefor;

means communicating said equalization conduit directly with the ambient air for relief of pressure in that said conduit.

3,853,038

UNITARY CYLINDER WITH PISTON RETAINING MEANS

Murray C. Roland, Fruitland, Ontario, Canada, assignor to International Harvester Company, Chicago, Ill.

Division of Ser. No. 796,289, Jan. 21, 1969, Pat. No. 3,538,575, which is a continuation of Ser. No. 644,263, June 7, 1967, abandoned. This application Mar. 4, 1970, Ser. No. 19,143

Int. Cl. F16j *1/06*

U.S. Cl. 92—128 **6 Claims**

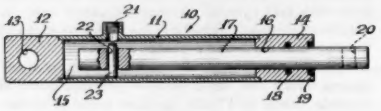
1. A piston and cylinder assembly, comprising in combination:

a unitary cylinder defining a cylindrical working chamber of a given diameter and having an axial bore of a diameter less than said given diameter communicating with said

chamber, said cylinder including a fluid inlet-outlet port communicating radially into said chamber;

a piston slidably received in said bore and adapted to reciprocate in said chamber, said piston having a transverse opening defined therethrough in a portion thereof received in said chamber; and

means retained in said opening completely within said chamber for limiting the movement of said piston outwardly from said chamber through said bore, said port



and said opening being in alignment to permit said means to be inserted into and removed from said opening through said port, said piston including a transverse aperture defined therein in a portion thereof outwardly of said chamber and extending parallel to said transverse opening, whereby said piston may be positioned to align said opening with said port by visual reference to the alignment of said aperture with respect to said port enabling insertion and withdrawal of said means with respect to said cylinder and piston.

3,853,039

IMPROVEMENTS RELATING TO TOBACCO-SMOKE FILTERS

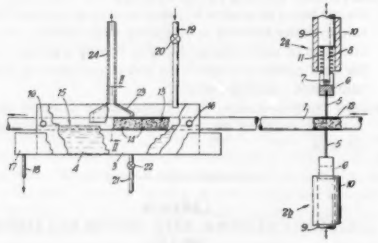
Fred Haslam; Henry George Horsewell, and Paul Henry Cannaway, all of Hampshire, England, assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Division of Ser. No. 181,353, Sept. 17, 1971, Pat. No. 3,779,787. This application Apr. 20, 1973, Ser. No. 352,929

Claims priority, application Great Britain, Oct. 7, 1970, 47706/70

Int. Cl. A24c *5/50*

U.S. Cl. 93—1 C **4 Claims**



1. A method of applying an additive to a smoking tobacco product component which comprises:

applying a wrapper to a continuous rod of a smoking tobacco product;

feeding said continuous rod past an additive applying station;

forming a liquid jet of the additive at such station and impelling it against the rod with sufficient force to penetrate the rod and the wrapper, thereby impregnating at least a section of said rod with said additive.

3,853,040

PROCESS AND APPARATUS FOR MAKING CROSSED-END BAGS FROM WELDABLE MATERIAL

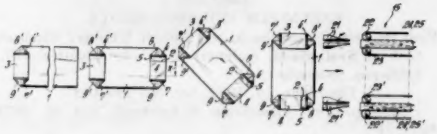
Fritz Achelpohl, Lengerich of Westphalia, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed Apr. 24, 1973, Ser. No. 353,973

Claims priority, application Germany, May 2, 1972, 2221376

Int. Cl. B31b *37/02, 1/84*

U.S. Cl. 93—35 R **7 Claims**



1. A process of making crossed-end bags from weldable material, which bags have an end consisting of open crossed-end folds and an end patch welded to the edges of the open crossed-end folds, characterized by the following process steps:

a. advancing a tubing section in its longitudinal direction, and at its leading end pulling the same open and flattening the same to form open crossed-end folds;

b. moving the end patch in synchronism with the tubing section and during this movement applying the same to the open crossed-end folds, and joining the end patch by seam welds to those edges of the infolded corner portions which are covered by the patch;

c. rotating the tubing section through 90° to its longitudinal direction; and further advancing the tubing section in its rotated orientation, in its original conveying direction; and

d. joining the side edges of the end patch by seam welds to the longitudinal edges of the open crossed-end folds.

3,853,041

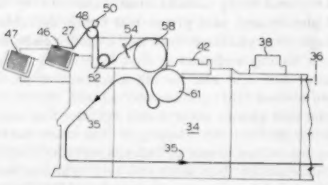
METHOD OF MAKING PRE-ADDRESSED ENVELOPES

Gary Andrew Lynas, Willowdale, Ontario, Canada, assignor to Globe Envelopes Products Limited, Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 238,220, March 27, 1972, abandoned. This application May 16, 1974, Ser. No. 470,378

Int. Cl. B31b *1/82, 49/04*

U.S. Cl. 93—61 A **8 Claims**



1. A method of making a pre-addressed mailing envelope, having an address positioned so as to be visible when the mailing envelope is in its designated use; and where the address positioned on said envelope has been printed on suitable web material at a printer output stage of a data storage device having a memory in which said address is stored and from which said address is read out for printing on said web material at said printer output stage; comprising the steps of:

a. reading out and printing a plurality of discrete addresses from said memory at said printer output stage, where each discrete address is printed on said web material at a

different place than any other such discrete address; and where there are two rows of pinwheel engaging holes in said web material for each column of addresses printed thereon, one row of said holes being at each side of said column of addresses;

b. feeding web material having a single column of addresses thereon to web cutting means and to conveying means associated therewith, where said feeding is done by means of pinwheels co-operating with said pinwheel engaging holes, and said conveying means is adapted to convey a cut portion of said web material away from said web cutting means at a linear speed higher than the speed at which said web material is being fed; where said conveying means is adapted to controllably and securely grip a cut portion of said web material from the moment when said web material is cut; and where said cutting means is sufficiently close to said conveying means so that the leading edge of said web material is in contact with said conveying means before said cutting means cuts said web material to form a cut portion thereof;

c. cutting said web material to form a cut portion having a discrete address printed thereon, and conveying said cut portion away from said cutting means by said conveying means, towards a predetermined position;

d. feeding an envelope blank to said predetermined position at the same linear speed as said cut portion is conveyed towards said predetermined position, applying said cut portion of said web material having said discrete address printed thereon to a specific area on said envelope blank when said specific area and said cut portion are both moving past said predetermined position at the same linear speed, so that said discrete address will be applied to said envelope blank at said specific area so as to be visible when an envelope is formed from said envelope blank and is in its designated use; the axis of the direction of feeding of said web material and the axis of the direction of feeding of said envelope blanks being parallel.

e. and forming an envelope from said envelope blank having applied thereto said cut portion of said web material with said discrete address printed thereon.

3,853,042

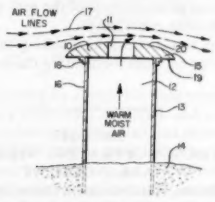
VENT COVER

Wayne Tobiasson, Etna, N.H., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 25, 1973, Ser. No. 409,499

Int. Cl. F24f *7/02*

U.S. Cl. 98—78 **4 Claims**



1. In combination, a hollow vent pipe defining an air vent, and means for preventing the accumulation of particulate matter within said air vent, said means comprising a vent cover mounted on top of said vent pipe, said vent cover being substantially circular in its horizontal plane and having a diameter from about 1.5 to about 2.0 times that of said vent pipe, said vent cover being of a generally plano-convex form, the lower surface of said vent cover being generally planar, the upper surface of said vent cover being convex, said vent cover having a generally cylindrically shaped opening of lesser diameter than the inside diameter of said vent pipe passing vertically from said lower surface to said upper surface of said vent cover substantially through the center of said vent cover through which air is conducted upwardly from said vent, said vent cover being adapted to increase the velocity of air flowing above the upper surface of said vent cover regardless of the direction of the compass from which wind blows against the edge of said vent cover and to cause the production of a lower pressure than the atmospheric pressure in the region just above the upper surface of said vent cover, whereby particulate matter falling or being transported by wind or being carried upwardly by eddies of air in the vicinity of said vent pipe, vent and vent cover is prevented from accumulating within said vent.

3,853,043

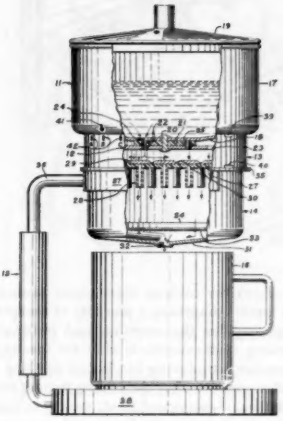
BEVERAGE MAKER

Napoleon Stavropoulos, 3011 Edwin Ave., Fort Lee, N.J. 07024

Filed Apr. 26, 1973, Ser. No. 354,888

Int. Cl. A23f *1/08*

U.S. Cl. 99—306 **1 Claim**



1. A beverage maker comprising:

a. a brewing chamber,

b. a conical floor in the brewing chamber,

c. a discharge port in the floor,

d. a generally flat support screen disposed across the brewing chamber in spaced relation to the conical floor,

e. a distributor chamber superposed on the brewing chamber,

f. a generally flat floor in the distributor chamber,

g. a plurality of generally tubular nozzles defining projecting spouts on the bottom floor of the distributor chamber communicating from the interior of the distributor chamber to the interior of the brewing chamber, whereby liquid in the distributor chamber is uniformly and completely discharged from the distributor chamber,

h. a sheet capable of penetration by liquid, attached to the floor of the distribution chamber over the top of the nozzles,

i. lines on the sheet defining separate liquid distribution areas for each nozzle,

j. a liquid reservoir superposed on the distribution chamber,

k. a discharge port in the bottom of the reservoir,

l. a selector plate rotatably attached to the bottom of the reservoir,

m. radial arms on the selector plate,

n. the arms affirmatively engageable with the distribution chamber,

o. a plurality of holes of graduated size in the selector plate,

p. the holes in the selector plate positioned for successive

registrations with the discharge port in the floor of the brewing chamber,

q. the selector plate rotatable with the distributor to successively bring a preselected hole in the selector plate into registration with the discharge port.

3,853,044

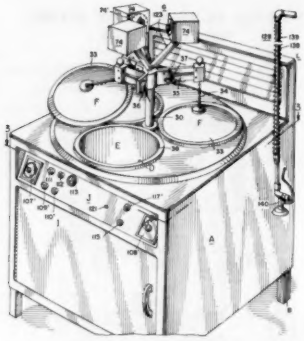
APPARATUS FOR COOKING FOOD IN HOT NON-AQUEOUS LIQUIDS UNDER PRESSURE

Charles Jere Albright, Chicago, and Clifford E. Fitch, Sr., South Holland, both of Ill., assignors to Chemetron Corporation, Chicago, Ill., by said Albright

Division of Ser. No. 881,230, Dec. 1, 1969, Pat. No. 3,793,940. This application June 7, 1973, Ser. No. 367,810

Int. Cl. A47j *37/12*

U.S. Cl. 99—330 **25 Claims**



1. An apparatus for cooking food under pressure in hot, non-aqueous liquid comprising a plurality of receptacles each having an opening for the insertion and removal of food, means for sealing each receptacle after the insertion of food therein, means for introducing hot liquid into one of the receptacles under pressure after the sealing thereof to effect the cooking of the liquid-immersed food, means connected with the receptacles for draining the liquid and pressure from the sealed receptacle containing the cooked food, before retracting the sealing means to permit the withdrawal of the food, and timing means connected with the apparatus for controlling a pre-set timed cooking period for the food-containing receptacle.

3,853,045

PANCAKE MAKING MACHINE

Paul Marrie, Dijon, France, assignor to S.A.R.L. "ETUD", Quetigny, France

Filed Apr. 5, 1972, Ser. No. 241,309

Claims priority, application France, Apr. 7, 1971, 71.12242; July 5, 1971, 71.24434; Feb. 25, 1972, 72.06409

Int. Cl. A47j *37/06*

U.S. Cl. 99—423 **2 Claims**

1. In a pancake making machine comprising a trough adapted to receive a supply of batter, a drum rotatable adjacent said trough and formed with a continuous cylindrical peripheral surface except for an axially extending recess, a rotatable transfer roller with access to the batter in said trough closely juxtaposed with said drum, means for rotating said roller and said drum for transferring batter from said trough to said drum, means for heating said drum and baking the batter thereon, and scraper means downstream from said roller in the direction of drum rotation for removing the baked batter from said drum, the improvement wherein said scraper means includes a pivotal support, a wire spanned across said support, spring means for tensioning said wire, and means for urging said wire against said surface.

3,853,046

COOKING DEVICE

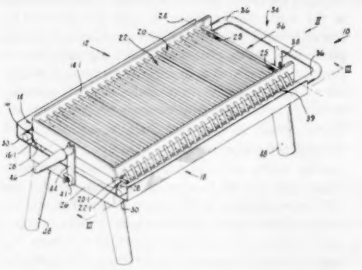
Hillius Pretorius, Johannesburg, South Africa, assignor to Super Braai (Proprietary) Limited, Johannesburg, South Africa

Filed Apr. 23, 1973, Ser. No. 353,801

Claims priority, application South Africa, Apr. 26, 1972, 72/2824

Int. Cl. A47j *37/06*

U.S. Cl. 99—449 **5 Claims**



1. A device for cooking meat, fish or like foodstuff, comprising:

a horizontal grill arrangement having upper and lower heat conductive grill members for receiving foodstuff to be cooked between them, the grill arrangement having a central portion defining a cooking zone for receiving foodstuff to be cooked, and having marginal portions defining heating zones,

gas burner means in the heating zones for directly heating only the marginal portions of the grill arrangement defining the heating zones, and

a collecting tray below the cooking zone for collecting liquids dripping from foodstuff in the cooking zone during use.

3,853,047

CONTINUOUSLY OPERATING WHIRL CHAMBER ARRANGEMENT

Wilhelm Dollbaum, Kaldenhausen, Germany, assignor to Holtz & Willemsen G.m.b.H., Krefeld-Uerdingen, Germany

Continuation-in-part of Ser. No. 116,142, Feb. 17, 1971, Pat. No. 3,782,968. This application Oct. 24, 1972, Ser. No. 299,787

Claims priority, application Germany, Feb. 19, 1970, 2007588

Int. Cl. A23b *9/00*; **B02b** *3/12*

U.S. Cl. 99—473 **8 Claims**

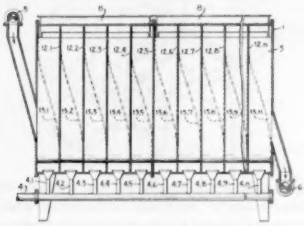
1. A whirl chamber arrangement for continuous treatment of granular material by a fluid acting upon the particles of the material for a predetermined time comprising in combination a whirl chamber having a bottom portion, an intermediate portion and a top portion;

a series of nozzles disposed at said bottom portion for introducing upward streams of said fluid into the chamber;

an outlet port arranged at said top portion for discharging said fluid;

a feeding opening disposed at one end section of said chamber for introducing said material therein and a discharging opening arranged at the opposite end section of the chamber,

a guiding shield extending within said chamber between said feeding opening and said discharging opening and spaced



from said bottom and top portions, and separating said intermediate portion,

said nozzles being directed to one side of said shield, and

a continuous spiral-like partition separating said whirl chamber between respective nozzles and extending about said shield, whereby the introduced material is successively lifted by the fluid stream from a nozzle at one side of said shield and returned to the region of a subsequent nozzle at the other side of said shield until discharged through said discharging opening.

3,853,048

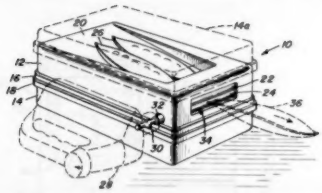
SHELLER DEVICE FOR PEAS AND THE LIKE

Glendale Collins, P.O. Box 642, Calhoun City, Miss. 38916

Filed Mar. 12, 1973, Ser. No. 340,372

Int. Cl. A47j *17/00, 43/00*

U.S. Cl. 99—572 **4 Claims**



1. A device for driving by a portable food mixer, said device including a housing consisting of upper and lower sections, said upper section including a top wall and depending peripheral side walls and said lower section including a bottom wall and upstanding peripheral side walls, said upper housing section being removably supported from said lower housing section with corresponding lower and upper marginal edges of the side walls of said upper and lower housing sections, respectively, telescopingly engaged with each other, a pair of vertically spaced horizontal rollers journaled from said upper housing section immediately inwardly of one peripheral side wall thereof, means drivingly connecting said rollers together for simultaneous rotation in opposite directions, said top wall including a central integral elongated and downwardly inclined portion extending from one end adjacent the peripheral side wall of said upper housing section remote from said one peripheral side wall toward the latter and terminating at the other end thereof at a point spaced slightly inwardly of and generally horizontally aligned with the adjacent peripheral portions of said rollers, at least the central portion of the end edge of said other end of said inclined portion being free of attachment to other portions of said housing, said one peripheral side wall of said upper housing section including an opening formed therein in horizontal registry with the adjacent peripheral portions of said rollers, and one of said rollers including an endwise outwardly projecting extension received through the adjacent peripheral side wall of said upper housing section and including means adapting said extension to have a portable kitchen hand mixer drive shaft removably drivingly coupled thereto.

3,853,049

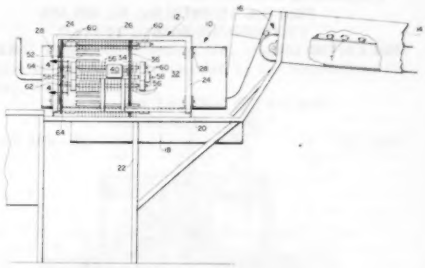
TOMATO SKIN REMOVING DEVICE

Kenneth Rex Wilkerson, Martinez, Calif., assignor to National Can Corporation, Chicago, Ill.

Filed Jan. 12, 1973, Ser. No. 323,068

Int. Cl. A23n *7/00*

U.S. Cl. 99—584 **7 Claims**



1. A device for removing the skins of tomatoes and the like comprising:

a drum open at both ends and mounted for rotation about its fixed longitudinal axis in a first direction;

a plurality of discs mounted on at least one shaft for rotation about the longitudinal axis of said shaft in a second direction opposite to said first direction, all of said axes being generally parallel to each other, said discs longitudinally spaced from each other along said shaft and each extending an equal minor distance into the interior of said drum from the circumference thereof;

means for rotating said drum in said first direction and;

separate meanas for rotating said discs in said second direction including a stationary chain supported by said drum, a sprocket mounted on each said disc shaft, said sprockets in turn mounted on said drum and each of said sprockets in turn engaged with said chain whereby rotation of said drum in said first direction causes rotation of said sprockets and said discs in said second direction.

3,853,050

APPARATUS FOR PEELING FRUIT SUCH AS A LEMON AND SLICING THE RIND

Gustave Schier, 2700 22nd St., San Francisco, Calif. 94110

Filed Apr. 30, 1973, Ser. No. 355,892

Int. Cl. A23n *7/00*

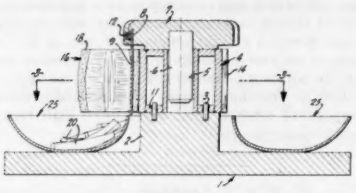
U.S. Cl. 99—590 **9 Claims**

1. Apparatus for peeling a fruit such as a lemon or the like comprising:

an elongated knife for insertion along a line on the meat and rind interface of said fruit,

a fixed base formed with a generally cylindrical outer surface for engaging the rind of such fruit and flattening that portion of the rind between said surface and said knife;

means supporting said knife for movement along a circular path of travel closely adjacent to said surface and coaxial



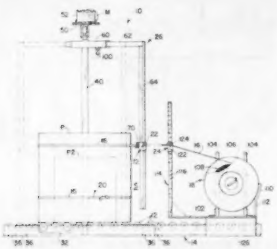
therewith, with such rind in rolling engagement with said surface for separating the rind from the meat.

3,853,051

STRAP POSITIONING APPARATUS

Kenneth R. Tyler, Arlington Heights, Ill., assignor to Signode Corporation, Glenview, Ill.

Filed Oct. 25, 1973, Ser. No. 409,686
Int. Cl. B65b *13/10*
U.S. Cl. 100—27 **8 Claims**



1. In an apparatus for positioning a loop of strapping about an object disposed at a strapping station preparatory to tensioning the loop about the object, in combination, a shuttle mounted for orbital movement in a closed horizontal arcuate path about said object, gripper means on said shuttle for releasably clamping the free end region of a length of strapping issuing from a strapping source, and means operable at will for effecting orbital movement of the shuttle in such closed path throughout substantially one complete revolution to draw the strapping from said source and wrap the same progressively about the object.

3,853,052

COMPACTOR WITH FIXED COMPACTION CHAMBER AND MOVABLE PLATE MEMBER

Einar O. Engebretsen, Troy, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio

Filed Dec. 29, 1972, Ser. No. 319,919
Int. Cl. B30b *15/32*
U.S. Cl. 100—229 A **3 Claims**

1. A compactor comprising:

a. a compactor housing,

b. means defining a fixed compactor chamber within said housing,

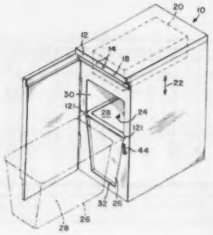
c. a deformable container received within said chamber and movable between a compacting position within said chamber and a noncompacting position displaced from said compacting position,

d. a ram mounted within said housing for reciprocating movement into and out of said container when said container is positioned in said compacting position,

e. said ram thereby being adapted to compact material deposited in said container causing bulging of said container into engagement with opposed portions of said chamber,

f. a movable plate member positioned between said container and said chamber for relieving pressure between said container and said opposed portions of said fixed chamber,

g. tab means on one of said plate members and said chamber and projecting therebetween,



h. means defining openings in the other of said plate member and said chamber disposed to receive said tab means upon shifting movement of said plate member, and

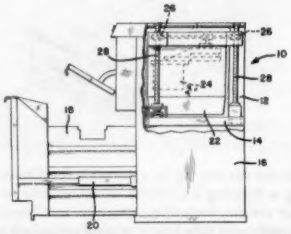
i. means for shifting said plate member between positions wherein said tab means is received in said opening means and displaced therefrom, thereby moving said plate member alternately between positions toward and away from said chamber and said container to facilitate displacement of said container from said compacting position to said noncompacting position.

3,853,053

BASE ASSEMBLY FOR A COMPACTOR

Ernst Grunewald, Troy, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio

Filed Sept. 17, 1973, Ser. No. 398,068
Int. Cl. B30b *15/04*
U.S. Cl. 100—229 A **11 Claims**



1. In a compactor including a housing, a receptacle received in said housing, and a compacting ram movable to compact material received in said housing, means for resisting compacting forces of said ram comprising:

a. a base member opposite said ram,

b. an elongated structural member extending across said base member in reenforcing relationship thereto,

c. said structural member including web means extending outwardly away from said base member, and

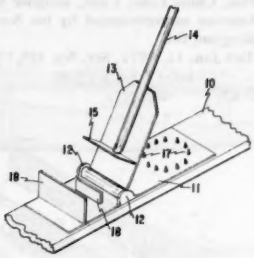
d. a tension member attached to said base member on one side of said structural member, extending over said structural member in spaced relation to said base member and attached thereto on the opposite side of structural member.

3,853,054

TIN CAN FOLDER

Lawrence E. Jacobsen, Browns Valley, Minn. 56219

Filed May 29, 1973, Ser. No. 364,667
Int. Cl. B30b 7/00, 9/32
U.S. Cl. 100—233 4 Claims



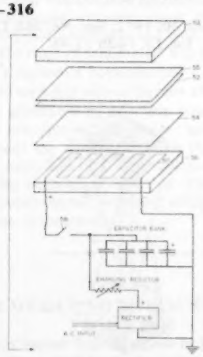
1. A can crushing and folding device comprising a base, a lever pivotally mounted on said base for movement from one side to the other, said base having a crushing face on one side and can folding means on the other side of the pivotal axis of said lever, said lever having a crushing face on the side adapted to meet the crushing face on said base, teeth formed on at least one of said crushing faces to hold a can in place during the crushing operation, and a creasing device on the side of the lever opposite said crushing face on said lever adapted to interact with said can folding means to crease the can placed on the folding means.

3,853,055

EDDY CURRENT PRINTER APPARATUS

Henry H. Kolm, Wayland, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 189,618, Oct. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 849,126, Aug. 11, 1969, abandoned, which is a continuation-in-part of Ser. No. 761,048, Sept. 20, 1968, Pat. No. 3,567,026. This application Jan. 25, 1974, Ser. No. 435,929
Int. Cl. B41f 1/06
U.S. Cl. 101—316 17 Claims



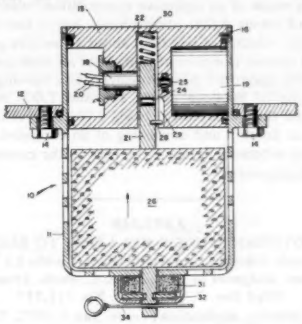
1. In an eddy-current printer, a backing plate having an impact absorbing surface against which printing can be effected, a thin homogeneous conductive sheet disposed adjacent to and closely spaced from the impact absorbing surface and having a contour similar to the contour of the impact absorbing surface, electric eddy-current means operable to cause a magnetic eddy-current field to enter the conductive sheet at one major surface thereof, thereby inducing an eddy current in the conductive sheet, which eddy current interacts with the field to provide a force to propel the conductive sheet toward the backing plate, a printing plate positioned between the conductive sheet and the backing plate, said printing plate being provided with indicia and being operable to move toward the backing plate under the impetus of the conductive sheet thereby to transfer indicia on said printing plate to a paper or the like when located between the printing plate and the impact surface of the backing plate, the electric eddy-current means comprising a driver plate of non-conductive material containing an embedded conductor which meanders over the whole of one surface region thereof so that eddy currents are induced substantially uniformly throughout the conductive sheet, both the driver plate and the backing plate being relatively massive compared to the mass of the conductive sheet so that the recoil energy of the conductive sheet is absorbed mostly by the driver plate and the deceleration energy upon impact thereof is absorbed mostly by the backing plate, the driver plate, the conductive sheet and the backing plate being closely spaced from one another so that the eddy currents provide an impulse distributed substantially uniformly over the conductive sheet thereby forcing the conductive sheet toward the backing plate.

3,853,056

SAFETY AND ARMING DEVICE

Lyman C. Fisher, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 30, 1963, Ser. No. 334,668
Int. Cl. F42b 22/26
U.S. Cl. 102—16 10 Claims



1. A safety and arming device for underwater ordnance items comprising:

a housing,

a detonator mounted on said housing,

a booster mounted on said housing in axial alignment with said detonator,

a shutter movably mounted on said housing between said detonator and said booster,

a transmission charge carried by said shutter and operable to complete an explosive train when axially aligned with said detonator and said booster,

resilient means normally urging said shutter and said transmission charge out of axial alignment with said detonator and said booster whereby the explosive train is interrupted and the ordnance item is disarmed, and

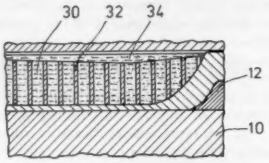
a float having a specific gravity less than one positioned within a cavity in said housing in fluid communication with the water when the housing is immersed therein and directly connected to said shutter whereby, upon immersion of the ordnance item in water, said shutter is moved by said float against the urging of said resilient means to axially align said transmission charge with said detonator and said booster to complete the explosive train and arm the ordnance item.

3,853,057

PROPELLANT CHARGE FOR SHELLS HAVING HIGH INITIAL VELOCITY

Walter Rickert, Lindemannstrasse 59, Dusseldorf, and Siegfried Justus, An der Juck 76, 507 Berg, Gladbach, both of Germany

Filed June 13, 1973, Ser. No. 369,442
Claims priority, application Germany, June 15, 1972, 2229192
Int. Cl. F42b 15/10
U.S. Cl. 102—49.2 13 Claims



1. A propellant charge for shells having high initial velocity, said charge comprising a first component, a second component, and a third component, said first component and said second component each comprising a multiplicity of disks alternatingly arranged to form a column, said disks of said first component having an axial thickness substantially exceeding that of said disks of said second component, said first component being made of an explosive composition, which, under a pressure of about 4,000 atmospheres has a linear burning propagation velocity of less than about 10 meters per second while said second component is made of an explosive composition which, under the same pressure, has a burning propagation velocity of between about 100 and 1,000 meters per second, said third component being a layer covering the surface of said column and consisting of an explosive composition having substantially the properties of the composition of said first component.

3,853,058

IMPROVEMENTS IN OR RELATING TO ROCKETS

Jean Tartault, Garches, and Alain Minot, Combs La Ville, both of France, assignors to Luchaire S.A., Paris, France

Filed Dec. 7, 1972, Ser. No. 311,717
Claims priority, application France, Jan. 5, 1972, 72.00202
Int. Cl. F42b 15/10
U.S. Cl. 102—49.3 8 Claims

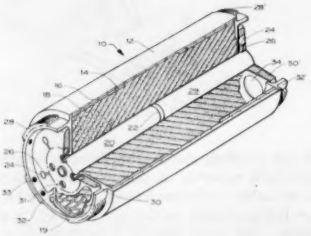
1. A self-propelled missile having a front end and a rear end, first and second chambers, the first chamber being positioned rearwardly of the second chamber, a combustible propellant charge contained in said first chamber, an explosive charge contained in said second chamber, said explosive charge comprising a fixed portion and a movable portion, and means for moving said movable portion of said explosive charge into said first chamber upon completion of combustion of said propellant charge, the means for moving the movable portion of the explosive charge comprising means for transmitting the pressure of the propulsive gases generated by combustion of said propellant charge to said movable portion and further comprising means for delaying movement of the movable portion of the explosive charge until shortly before completion of the combustion of the propellant charge, the delaying means comprising an accumulator chamber, means connecting said accumulator chamber with the first chamber and means connecting said accumulator chamber with that portion of the second chamber containing the movable portion of the explosive charge.

3,853,059

CONFIGURED BLAST FRAGMENTATION WARHEAD

Richard G. Moe, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 11, 1971, Ser. No. 105,739
Int. Cl. F42b 13/48
U.S. Cl. 102—67 8 Claims



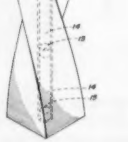
1. A substantially cylindrical warhead having a fragmentation casing;
detonation initiation means centrally located in said warhead a plurality of detonation boosters spaced around each end of said warhead; and
detonation transfer means connecting said intiation menas and said booster means;
whereby the warhead may be selectively detonated at a plurality of points at either end or both ends or detonated centrally.

3,853,060

TWISTED PRISM EXPLOSIVE DEVICE

Gale S. Weeding, Denver, Colo., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 30, 1972, Ser. No. 268,226
Int. Cl. F42b 13/48
U.S. Cl. 102—67 7 Claims



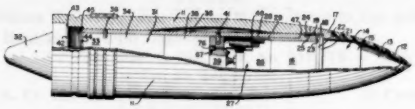
1. A warhead comprising:
a warhead casing being substantially the shape of a twisted prism having a longitudinal axis and a straight side between each adjacent corner of the prism;
explosive within said casing; and
detonator means disposed within said explosive means along said longitudinal axis,
said prism being twisted about said longitudinal axis, and
said explosive means touching the longitudinal sides of the prism at all points.

3,853,061

FUZE AND SONDE COAXIAL CONNECTOR

Louis A. Schmidt, 2404 57th Pl., Hyattsville, Md. 20785

Filed Oct. 27, 1961, Ser. No. 148,295
Int. Cl. 339 *177 R;* **F42b** *9/08;* **H01r** *17/18*
U.S. Cl. 102—70.2 R **5 Claims**



1. In combination; an aerodynamically-shaped casing having forward and aft ends, a central bore in said casing extending from said aft to said forward end, a fuze assembly secured in said forward end and having a portion thereof extending into said central bore, a radio sonde assembly secured in said aft end and having a portion thereof extending into said central bore, a coaxial, multichannel connector positioned entirely within said casing and being electrically connected to both of said assemblies, said multichannel connector including a first male portion having an electrically non-conductive base member with oppositely facing surfaces, a central, radially expandable plug-in type jack secured to said base member and extending from one of said surfaces, a set of concentric rings secured to said base member and extending from said one surface, terminal means secured to the other of said base member surfaces, and means for individually connecting said jack and each of said rings to said terminal means, and a second female portion including a non-conductive base member having two oppositely facing surfaces, a centrally located receptacle for receiving said jack opening to one of said surfaces, a set of concentric, axially slotted, annular rings secured to said female base member and extending from said one surface, terminal means secured to the other of said female base member surfaces, and means for individually connecting said receptacle and each of said last-named rings to said last-named terminal means, whereby, upon frictional engagement of said jack with said receptacle and each of said rings of said male set with the rings of said female set, a plurality of electrical paths are established between said male terminal means and said female terminal means thereby allowing communication of signals generated by said fuze assembly to said sonde assembly and telemetered therefrom, and upon rotation of said casing about the longitudinal axis thereof, said expandable jack and said rings of said female set are urged radially outward by the centrifugal force of the rotation and into increased frictional contact with said receptacle and said rings of said male set, respectively.

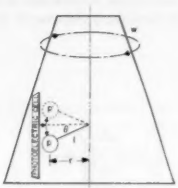
3,853,062

DEVICE FOR MEASURING DISTANCE OF TRAVEL BY A PROJECTILE

Lewis C. Cole, Chester, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 159,374, July 2, 1971, abandoned. This application Feb. 28, 1973, Ser. No. 336,663
Int. Cl. F42c *9/00, 11/00*
U.S. Cl. 102—70.2 R **6 Claims**

1. A device for determining the distance traversed by a spin-stabilized projectile having a spinning shell, which device comprises, in combination, a fuze element coaxially mounted in said projectile, pendulum means attached to said fuze element and adapted to oscillate therein in response to the centrifugal force generated by said spinning shell so that the frequency of cycles of said pendulum means is proportional to the revolutions of said spinning shell of said projectile, and



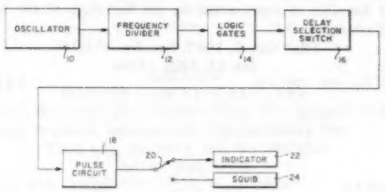
means for determining the frequency of oscillation of said pendulum means.

3,853,063

ELECTRONIC FIRING DELAY DEVICE, DEMOLITION

John D. Hoyt, Oxon Hill, and John J. Pennella, Bryans Rd., both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 30, 1973, Ser. No. 393,096
Int. Cl. F42c *11/06*
U.S. Cl. 102—70.2 R **5 Claims**



1. An electronic firing delay circuit for firing an explosive igniting device comprising:

means for producing a periodic signal having a predetermined frequency;

means for dividing the frequency of said periodic signal to produce a plurality of pulses on a plurality of channels each having a different frequency and each initially delayed by a single cycle of said different frequency;

means for selecting one of said plurality of channels;

switching means for completing a circuit loop so as to cause a capacitor in said circuit loop to discharge through said explosive igniting device causing said device to fire said explosive upon detecting the presence of one of said pulses on said selected channel.

3,853,064

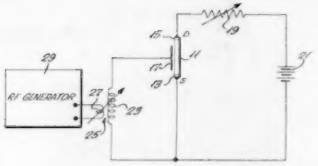
METHOD OF INDUCING NEGATIVE - IMPEDANCE EFFECT, AND DEVICES BASED THEREON

Robert H. McCracken, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 17, 1967, Ser. No. 609,969
Int. Cl. F42c *11/00, 13/04*
U.S. Cl. 102—70.2 R **8 Claims**

3. An electronic circuit comprising a semiconductor device of the type which has a capacitance that varies with the value

of potential applied to an electrode thereof, an inductor connected to said semiconductor device to form a resonant circuit with said capacitance, and means to apply to said electrode a



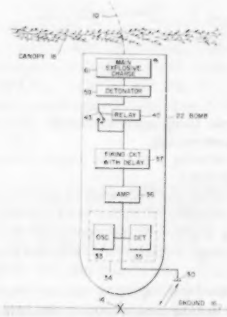
radio frequency signal having a frequency a little below the resonant frequency of said resonant circuit so that said semiconductor device exhibits a negative-impedance effect.

3,853,065

CANOPY PENETRATION FUZE

Maurice Apstein, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 2, 1967, Ser. No. 673,249
Int. Cl. F42c *13/04*
U.S. Cl. 102—70.2 P **2 Claims**



1. A canopy-penetration type of proximity fuze, for use against ground targets, that will descend through a high ground cover of foliage or the like without detonating and that will thereafter detonate in response to the proximity of the ground, said fuze comprising:

a. proximity-response signal means to produce a signal upon approach of said means to the canopy and ground respectively;

b. detonator means;

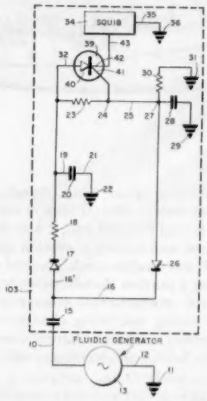
c. means responsive to said signal produced upon approach to said canopy to connect a detonator in circuit with said signal means so that the signal produced upon approach to the ground will activate said detonator.

3,853,066

FLUIDIC ARMING SYSTEM

Carl J. Campagnuolo, Chevy Chase; Charles F. Peer, Silver Spring, and David L. Rawlings, North Bellmore, all of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 16, 1967, Ser. No. 684,602
Int. Cl. F42c *5/00*
U.S. Cl. 102—70.2 G **9 Claims**



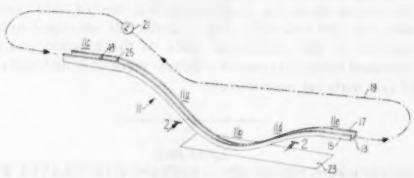
1. A fluidic arming system for a missile or the like, comprising: a fluidic operated electrical generator operatively coupled to the missile and responsive to missile movement, an electrical circuit including a normally deenergized electrically operated fuse firing element, a capacitor coupled to said generator and charged thereby, and means responsive to cessation in generator operation for causing said capacitor to be discharged through said fuse firing element.

3,853,067

BOAT AMUSEMENT RIDE WITH A SPILLWAY

Karl W. Bacon, Mountain View, Calif., assignor to Arrow Development Company, Mountain View, Calif.

Filed Feb. 25, 1974, Ser. No. 445,456
Int. Cl. A63g *21/18*
U.S. Cl. 104—70 **4 Claims**



1. In a boat amusement ride having a downchute portion with a common boat carrying and water guiding surface that recovers part way in elevation from the bottom of the chute, the improvement comprising:

a removable barrier at the top of said downchute that is operable between an open position and a position that substantially closes off water flow down said downchute, means operably connected to said barrier for operating it between said open and closed positions in response to a control signal, and

a water level sensor positioned within said downchute upstream of said barrier but adjacent thereto, said sensor emitting a control signal to said barrier operating means

that causes the barrier to move to its open position when the water level behind the barrier reaches a predetermined level.

3,853,068

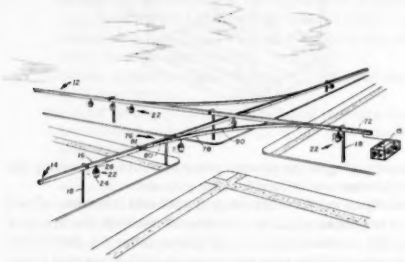
MECHANICALLY LINKED PERSONAL RAPID TRANSIT SYSTEM

William H. Avery, Silver Spring, Md., assignor to The Johns Hopkins University, Baltimore, Md.

Filed Mar. 8, 1973, Ser. No. 339,275

Int. Cl. B61b *3/02*

U.S. Cl. 104—148 LM **25 Claims**



1. Apparatus for mechanically linking and propelling passenger-carrying vehicles comprising:

a guideway rail;

a continuously moving mechanical linkage extending along the guideway rail and being movable therealong, said linkage being comprised of electrically conductive material;

A plurality of carriages joined to one each of the passenger-carrying vehicles and movable along the guideway rail;

means releasably engaging the mechanical linkage to each of the carriages at spaced points along the linkage;

means for establishing an inductive reaction with the conductive mechanical linkage;

means for electrically energizing the last-mentioned means, thereby causing said means and the linkage to act respectively as the primary and secondary of a linear electric motor, the linkage thus being propelled relative to the rail longitudinally thereto to likewise move the vehicles mechanically linked to said linkage along said rail; and,

means at a first control location along said guideway rail for bringing together said mechanical linkage and the engaging means of a carriage to be propelled by said linkage.

3,853,069

VEHICLE STEERING MEANS

Laurence Goodwin, Harpenden, England, assignor to Hawker Siddeley Dynamics Limited, Hatfield, Hertfordshire, England

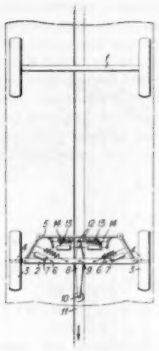
Filed Aug. 18, 1972, Ser. No. 281,857

Claims priority, application Great Britain, Aug. 19, 1971, 38880/71

Int. Cl. B62d *3/00*

U.S. Cl. 180—79 **10 Claims**

1. Apparatus for steering a wheeled vehicle, comprising a longitudinally-extending stationary guidance element lying substantially continuously along the length of a track that the vehicle is to follow, follower means mounted on the vehicle and arranged for shifting laterally to and fro relatively to the vehicle while following the line of said guidance element, a steering mechanism whereby steerable wheels of the vehicle are steered, means for automatically centering said steering mechanism, and means operatively connecting the follower means to the steering mechanism such that the lateral movements of the follower means are translated into steering move-



ments of the steering mechanism, said connecting means including both resilient-coupling means and damping means whereby said steering movements are both resiliently transmitted and damped.

3,853,070

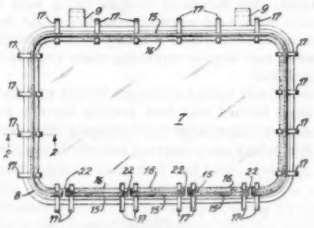
HOPPER GASKET STRUCTURE

James J. Hennessy, Jr., Chambersburg, Pa., assignor to Hennessy Products, Incorporated, Chambersburg, Pa.

Filed Aug. 23, 1973, Ser. No. 390,873

Int. Cl. B61d *7/18*

U.S. Cl. 105—247 **5 Claims**

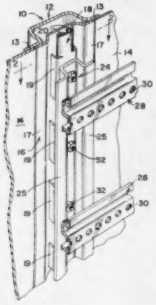


1. A gasket structure applicable to a hopper door edge and comprising an elongated flexible body of compressible material of substantial thickness, with an outwardly projecting rib, and a plurality of relatively short narrow strips of thin metal spring material of generally Z shape contour from end to end, each of said strips having a web and a pair of oppositely directed flanges at its respective ends and having a return bend at the outer end of one of said flanges adapted to receive and tightly grip a door edge and having an oppositely facing return bend at the outer end of its other flange receiving and tightly gripping said rib and thereby retaining the body of compressible material between the oppositely facing return bend and the Z web when distorted by the closing of the door.

3,853,071
STRAP ANCHOR AND BELT RAIL MOUNTING ARRANGEMENT

Richard C. Snyder, Michigan City, and William D. Mundinger, Highland, both of Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed June 21, 1973, Ser. No. 372,460
Int. Cl. B61d *17/08*
U.S. Cl. 105—409 **5 Claims**



1. A railway vehicle for transporting cargo restrained by flexible lading straps and rigid bar means and having a side wall unit comprising a plurality of vertically extending side wall posts connected to side wall sheets and each one of said side wall posts having an open portion facing inwardly of the railway vehicle, the improvement of said railway vehicle comprising:

an anchor mounting plate positioned in said open portion of at least one of said side wall posts, having a recessed portion extending outwardly of said vehicle and received within said open portion of its associated side wall post; strap anchor rail means having spaced leg portions being fixedly attached to said recessed portion of the anchor mounting plate and said rail means including a base portion for interconnection said leg portions;

said strap anchor rail means having spaced turned-in flanges connected to said base portion and spaced from said leg portions, said turned-in flanges being held in spaced relation from said anchor mounting plate by said leg portions so as to define a lading strap receiving opening between said anchor mounting plate and said turned-in flanges, and

each one of said turned-in flanges having end portions bent inwardly toward said base portion thereby providing a smooth rounded edge for engaging and restraining a flexible lading strap inserted into the lading strap receiving opening.

3,853,072
PALLET TIERING FRAME INTERLOCK DEVICE

Leroy F. Skubic, La Porte, and Peter P. Blozis, Michigan City, both of Ind., assignors to The Paltier Corporation, Michigan City, Ind.

Filed Jan. 25, 1972, Ser. No. 220,608
Int. Cl. B65d *19/44*
U.S. Cl. 108—55 **8 Claims**

1. In a pallet tiering frame comprising a pair of non-identical frame sections each defined by a pair of upright posts with pallet engaging feet and an integrally connected generally horizontal top member of substantially V-shaped form, an interlock device comprising, in combination,

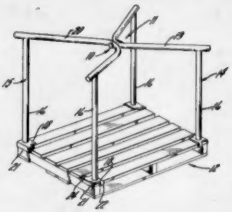
a. a locking pin journalled in alined bearing apertures in one said top member and projecting longitudinally from the apex of said top member in the general plane thereof;

b. means on said locking pin intermediate the ends thereof said between said top member apertures for holding said locking pin captive in said one top member and restraining said pin against axial withdrawal therefrom;

c. means defining a screw thread on the projecting end portion of said locking pin;

d. a turning knob fixed to the opposite end of said locking pin for rotating the same;

e. menas defining a pair of alined receiving apertures in the other one of said top members at the apex thereof and on



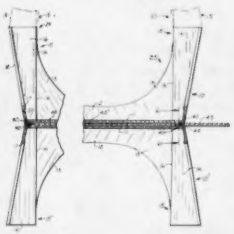
an axis lying in the general plane thereof for receiving the projecting end of said locking pin; and

f. a stamped nut member integral with said other one of said top members adjacent and concentric with the aperture on the concave side of said top member for threadably engaging said locking pin to releasably secure said frame sections together when said frame members are assembled on a pallet and sai locking pin has been inserted through said alined receiving apertures of said other top member.

3,853,073
TABLE-LIKE DISPLAY FURNITURE UNIT AND STACKABLE MODULES THEREOF

Paul L. Flum, University City, and Dewalt W. Fowler, Creve Coeur, both of Mo., assignors to Paul Flum Ideas, Inc., St. Louis, Mo.

Filed Sept. 28, 1973, Ser. No. 401,664
Int. Cl. B65d *19/49, 21/06*
U.S. Cl. 108—91 **5 Claims**



1. For use as display furniture and the like, the base and stackable module comprising

A. a table-like base unit having

a table top portion terminating in a downward and somewhat outward slanting apron portion, and

having an even number of tapering legs whose outer surfaces are downward continuations of the outer surfaces of said apron portion, the legs having vertical inner portions beneath said table top portion,

the legs further having hollow lower ends, and

means formed perpendicular to said table top portion to align with a similar module and to resist transverse displacement therefrom, said means comprising

a plurality of projecting post means and a corresponding plurality of inwardly extending post-accommodating well means positioned along lines adjacent to a first pair of opposite edge portions of said surface,

the post and well means along one of said lines being located at spacings from one of the edge portions intermediate thereto which corresponds to the spacings, measured from the same intermediate edge portion, of corresponding post and well means located along the other of said lines, and

B. a plurality of stackable modules located thereon, each comprising two units, each being formed similarly to said table-like base unit, with plug means formed in the lower ends of half of said legs and socket means formed in the lower ends of the other legs,

whereby when one of said units is inverted to present its hollow leg ends upward, the leg ends of a similar unit may be interfitted thereto, thereby to form a module whose sides are windowed by the apron and leg portions, in combination with

C. a planar shelf whose thickness is at least twice the height of said post means,

the shelf having post-accommodating recesses spaced to correspond with the spacings of the post means of the said module,

whereby when the post means projecting downward from one said module is aligned with the upward extending posts means of another of said modules or of said table-like base unit therebeneath, said planar shelf may be interfitted on said post means to extend horizontally outward, for support at the same level by a similar base and stackable module.

3,853,074

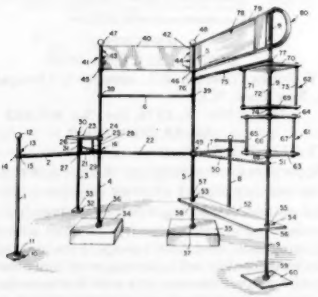
STRUCTURE FOR SUPPORTING ARTICLES FOR DISPLAY PURPOSES

Marion J. Madey, Park Ridge, Ill., assignor to Poster Products, Inc., Chicago, Ill.

Continuation of Ser. No. 127,613, March 24, 1971, abandoned. This application Mar. 7, 1973, Ser. No. 338,929

Int. Cl. A47b *57/06*

U.S. Cl. 108—101 **3 Claims**



1. A structure for supporting articles for display purposes comprising a plurality of vertically disposed continuously externally threaded rods, means at one end of each of said rods for holding said rods in a vertical position, means comprising one or more horizontally disposed continuously externally threaded rods spaced from said ends of said vertical rods, fittings connecting two or more said vertical rods and one or more said last mentioned horizontal rods together intermediate the ends of said vertical rods, said fittings being internally threaded to receive said external threads of said vertical and horizontal rods, additional internally threaded fittings on one or more of said vertical rods, and one or more article supporting members extending outwardly laterally with respect to said vertically disposed rods, said article supporting members being supported by one or more said additional fittings, and at least one of said article supporting members having a cubical configuration with a top member, a bottom member to receive an article to be displayed, open sides, and vertical rods adjacent the corners connecting said top and bottom members, one of said vertical rods being one of said vertically disposed continuously threaded rods, and the latter containing an internally threaded fitting mounted thereon with the internal threads of said fitting engaging the external threads of said rods, said article supporting member being mounted on said fitting and being rotatable about said vertically disposed continuously threaded rod.

3,853,075

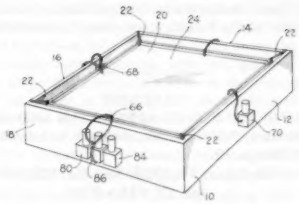
AUTOMATICALLY OPERABLE SELF-LEVELING LOAD TABLE

John L. Burch, Decatur, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 8, 1973, Ser. No. 386,790

Int. Cl. A47b *9/02*

U.S. Cl. 108—136 **7 Claims**



1. A self-leveling load table comprising:

a. a tank;

b. a liquid medium carried in said tank;

c. a table having a smooth planar top, side walls extending downwardly from said planar top defining a cavity therebetween, and partitions extending between said side walls defining sealed chambers having opened bottoms;

d. said table being disposed in said liquid medium carried in said tank trapping air in said chambers so as to provide buoyancy thereto;

e. a plurality of solenoid valves having an air inlet port, an air outlet port, and a control contact;

f. means for coupling said air outlet ports of said solenoid valves to predetermined chambers;

g. a level sensing means coupled to said control contacts of said solenoid valves for selectively energizing said solenoid valves responsive to said table being out of level;

h. a source of pressurized air; and

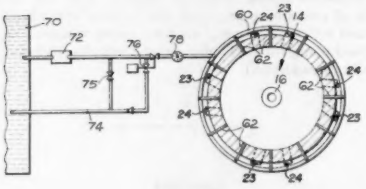
i. means for supplying pressurized air from said source through said energized solenoid valves to said chambers connected thereto for maintaining said table level.

3,853,076

FURNACES

John Brian Stribling, Sutton Coldfield, England, assignor to Lucas Furnace Development Limited, Western Way, Wednesbury, Staffordshire, England

Filed Oct. 18, 1973, Ser. No. 407,612
Claims priority, application Great Britain, Oct. 31, 1972, 50073/72
Int. Cl. F23g 7/00
U.S. Cl. 110—7 R 3 Claims



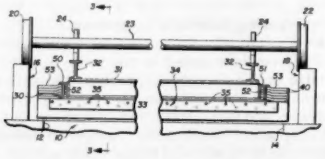
1. A furnace for burning liquid waste, comprising a cylindrical combustion chamber having a conical upper end terminating in an exhaust outlet, a shallow frusto-conical hearth forming the lower end of the combustion chamber, and a plurality of fuel burners which extend into the combustion chamber and are downwardly and tangentially inclined to direct the flame at the hearth, and to induce cyclonic action of the combustion products so as to produce a vortex of flame in the combustion chamber, wherein the improvement comprises a conduit for conducting the liquid waste having a plurality of outlets distributed around the periphery of the hearth to cause the liquid waste to trickle down the hearth, where it is evaporated and burned to produce vapors which pass through the vortex of flame to complete the combustion, and an ash well at the center of the hearth for removal of incombustible residues.

3,853,077

SOAKING PIT COVER APPARATUS AND METHOD

Peter Malovich, Bellwood, Ill., assignor to Inland Steel Company, Chicago, Ill.

Filed Jan. 29, 1973, Ser. No. 327,830
Int. Cl. F23m 7/00
U.S. Cl. 110—173 A 9 Claims



1. A soaking pit cover for use with a soaking pit, said cover comprising:

a cover plate having a bottom surface;

spaced holding means connected to and depending from the bottom surface of said plate; and,

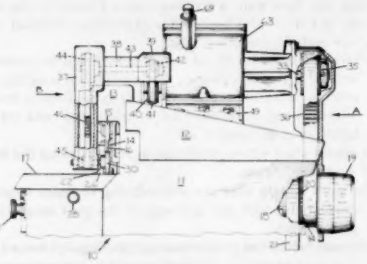
flexible insulating material connected to and disposed in the spaces between said spaced holding means to form an insulating surface adjacent substantially the entire bottom surface of said cover whereby the bottom surface of said cover plate is substantially lined with said insulating material.

3,853,078

SEWING MACHINE WITH UPPER ROLLER FEEDING DEVICE ADJUSTABLE INDEPENDENTLY FROM THE FEED DOG

Nerino Marforio, Milan, Italy, assignor to S.p.A. Virginio Rimoldi & C., Milan, Italy

Filed Mar. 22, 1973, Ser. No. 343,622
Claims priority, application Italy, Apr. 11, 1972, 23000/72
Int. Cl. D05b 27/00
U.S. Cl. 112—211 5 Claims



1. In a sewing machine having a main drive shaft, a work supporting surface having a needle plate, a needle carried in a needle clamp mounted for reciprocating movement and a bifurcated presserfoot with a feed dog operatively associated therewith for advancing a plurality of layers of work along the supporting surface to the needle for the formation of stitches therein, the improvement comprising:

a. an upper work feeding device including a feed roller mounted in the bifurcation of the presserfoot at a position located forwardly of the sewing machine needle and in direct line therewith for contact with the upper layer of work in opposed relation to the feed dog;

b. drive means interconnecting the main drive shaft with said feed roller for effecting rotation of the latter;

1. said drive means including a first adjustable device for transforming the motion of the main drive shaft into alternating movements, and

2. a second transmission device operably connected to said first adjustable device to receive the alternating movements therefrom and effect unidirectional and intermittent motion of said feed roller during its alternating movement by said first adjustable device.

3,853,079

DOUBLE SUCTION UNIT

Owen F. Dunne, Tiverton, R.I., assignor to Clevepak Corporation, New York, N.Y.

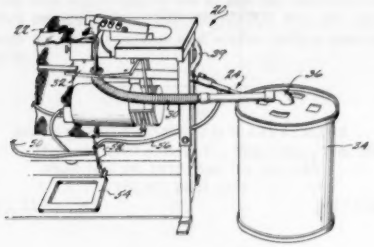
Filed Mar. 7, 1974, Ser. No. 449,082
Int. Cl. D05b 81/00
U.S. Cl. 112—218 R 6 Claims

1. Apparatus for removing cut threads and trimmed edges from the working area of a sewing machine comprising:

a dual suction unit having a first air passage from an inlet to an outlet, a second air passage from an inlet to an outlet opening into said first passage between the inlet and outlet thereof, at an acute angle to inject the air stream in said second passage into said first passage to transfer momentum and cause an air stream to flow between the inlet and outlet of said first passage and a third air passage opening into said second passage between the inlet and outlet thereof at an acute angle to inject an air stream at a pressure above atmospheric pressure into said second passage to transfer momentum and cause an air stream to flow between the inlet and outlet of said second passage, first hose means for pneumatically connecting one of said inlets to the region adjacent where edges are being cut,

second hose means for pneumatically connecting the other of said inlets to the region adjacent where threads are being cut,

third means pneumatically coupling said outlet of said first passage to a waste container, and



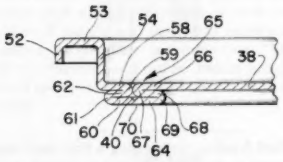
means for pneumatically connecting said third air passage to a source of air at a pressure above atmospheric pressure.

3,853,080

CONTAINER END AND FORMING METHOD

Arthur P. Zundel, Chicago, Ill., assignor to National Can Corporation, Chicago, Ill.

Filed Oct. 24, 1972, Ser. No. 300,384
Int. Cl. B21d *51/26*
U.S. Cl. 113—121 C **3 Claims**



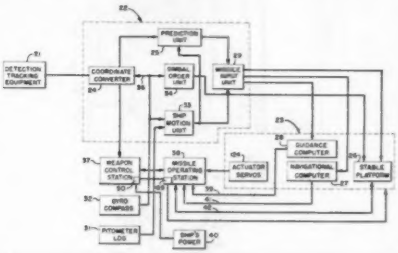
1. The method of forming a container having a central removable panel comprising; partially forming a can end blank into a configuration comprising a horizontal curl portion around the periphery thereof, a vertical seaming wall connected to an inner edge of said curl portion, a horizontal first upper run, a first vertical intermediate run connected thereto at a first foldable corner, a horizontal lower run in turn connected at one end thereof to said first intermediate run, a second vertical intermediate run connected to the other end of said lower run, said second intermediate run in turn connected to a horizontal second upper run, at a second foldable corner, forming a weakened line in said lower run intermediate opposite edges therof and thereafter; deforming said first and second vertical intermediate runs so that said intermediate runs are generally parallel to said horizontal lower run on one side thereof and said first and second foldable corners are located in close proximity to said weakened line on opposite sides thereof.

3,853,081

METHOD AND APPARATUS FOR DESTROYING SUBMARINES

Roland G. Daudelin, Silver Spring, Md.; Robert S. Flum, Sr., Oak Park, Ill.; Bob Norris, and Lionel L. Woolston, both of Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 28, 1958, Ser. No. 770,235
Int. Cl. F42b *19/00*
U.S. Cl. 114—20 A **8 Claims**



1. An anti-submarine missile adapted to be launched from the torpedo tube of a submarine which comprises; a weapon portion including a guidance section, a rocket motor portion secured to said weapon portion, means fixed to said missile for orienting the missile within the torpedo tube, a cover, explosive bolt means disposed about said cover to releasably secure the cover to said rocket motor portion and prevent water entry therein prior to ignition of said rocket motor, means electrically connected to said guidance section for igniting the rocket motor in the water when the missile is at a safe distance from the submarine, said explosive bolt means being electrically connected to said guidance section for initiation by an electric signal therefrom to release the cover from the rocket motor substantially simultaneously with the ignition of said rocket motor to permit exhaust gases from the rocket motor to blow off said cover, a plurality of vanes disposed in the rocket exhaust and electrically connected to said guidance section whereby said vanes are controlled by signals from the guidance section to stabilize the missile and steer it out of the water, means in said rocket motor portion electrically connected to said guidance section for separating said rocket motor portion from said weapon portion upon receipt of a signal from the guidance section, and aerodynamic control means on said weapon portion operatively connected to said guidance section for guiding the missile toward a predetermined water reentry point.

3,853,082

MECHANICAL RETRIEVER

Edgar N. Rosenberg, and Stephen F. Moran, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 3, 1973, Ser. No. 356,884
Int. Cl. B63c *7/20*
U.S. Cl. 114—51 **8 Claims**

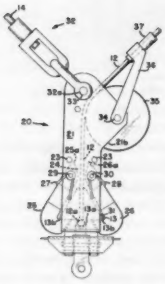
1. An apparatus guided by a marker buoy line joined to a line anchor on a sunken vessel and a first surface craft for securing a hoisting cable coupled to a second surface craft to the sunken vessel when the first and second surface craft move in diverging directions comprising:

a body member shaped with a longitudinal channel for receiving the marker buoy line and having a connector portion formed to engage the line anchor when a sufficient downward force is created as the first and second surface craft move in diverging directions;

a first member disposed on one side of said body member coupling the hoisting cable thereto; and

a second member journaled in the opposite side of said body member configured to orient the marker buoy line in a direction diverging from the hoisting cable and being further configured to ensure the exertion of said sufficient downward force as the hoisting cable and marker buoy line are pulled in opposite directions by the first and second surface craft to further ensure the securing of the hoisting cable to the sunken vessel.

8. A method of attaching a hoisting cable coupled to a securing apparatus to a sunken vessel comprising:



passing a marker buoy line joined to the sunken vessel through a channel in the securing apparatus;

directing the marker buoy line in a direction diverging from the hoisting cable;

pulling the hoisting cable and marker buoy line in opposite directions to force the securing apparatus down the marker buoy line and toward the sunken vessel; and

engaging a line anchor on the sunken vessel by reason of the pulling in opposite directions to attach the hoisting cable on the sunken vessel.

3,853,083

ANCHOR SILENCER AND BOAT PROTECTOR

Ralph L. Jones, P.O. Box 686, 514 S.W. 4th St., Magee, Miss. 39111

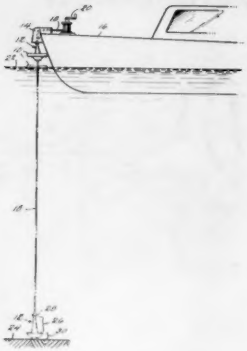
Filed June 6, 1973, Ser. No. 367,409

Int. Cl. B63b *21/22*

U.S. Cl. 114—210 **10 Claims**

1. Apparatus for use in conjunction with a boat in water and an anchor attached to the boat for anchoring the boat while in water to a relatively fixed body such as the floor of the body of water by a retractable cable affixed at one end to said anchor and at the other end to said boat, said apparatus comprising:

a floatable body adapted for free movement along and about said cable whereby said body floats on the water when the anchor is lowered below the water surface, and said floatable body comprises a recessed area for engaging said anchor therein and to automatically cooperate with said anchor when it is raised via the retractable cable by rising with the anchor and shielding the anchor from



other objects thereby minimizing noise and/or damage from anchor contacts with said other objects.

3,853,084

DOCK AND WHARF FENDERS

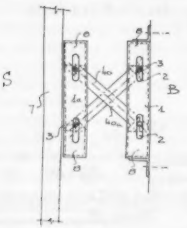
Mordecai Kedar, 34 Kafrisin St., Tel Baruch, Israel

Filed May 25, 1973, Ser. No. 364,118

Claims priority, application Israel, May 26, 1972, 39555

Int. Cl. E02b *3/22*

U.S. Cl. 114—219 **3 Claims**



1. Dock wharf fenders, comprising a first rigid longitudinal member arranged to be affixed to and to extend along a dock or wharf wall, a pair of elongated slots formed in said first member with each of said slots located adjacent an opposite one of the ends of said first member and extending in the longitudinal direction of said first member, a second rigid longitudinal member disposed in generally parallel relation with said first member and being spaced laterally from said first member so that it is located outwardly from the dock or wharf wall, a pair of elongated slots formed in said second member with each of said slots located adjacent an opposite one of the ends of said second member and extending in the longitudinal direction of said second member, a pin associated with each of said slots in said first and second members with each said pin being freely movable through its associated said slot in the direction of said slot and with the axis of said pin extending transversely to the longitudinal axis of said member in which said slot is located, a first lever and a second lever arranged in separated and crossing relationship, said first and second levers each extending between said first and second members and each being connected to a different one of said pins in said first and second members, said first and second

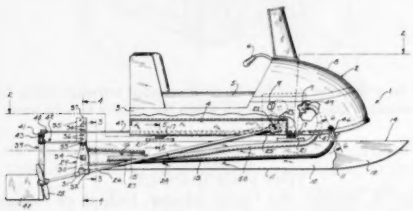
levers crossing at a location intermediate their ends, a rubber buffer located at each of the ends of said first and second levers, each said rubber buffer being positioned along a portion of the path of said slot located at the end of said lever with which said buffer is associated so that a force transmitted against said second member in the direction normal to the longitudinal direction of said second member is transmitted over said first and second levers to said first member and is absorbed as said pins in said slots in said first and second members are forced against said rubber buffers associated therewith.

3,853,085

SNOWMOBILE POWERED WATERCRAFT

Robert V. Halboth, 2177 S. 35th St., Milwaukee, Wis. 53215

Filed July 26, 1973, Ser. No. 382,725
Int. Cl. B60f *3/00*
U.S. Cl. 115—1 R **17 Claims**



1. In a watercraft having a hull, a snowmobile to power said watercraft, said snowmobile including a chassis normally supported upon an endless track mechanism driven from a sprocket shaft and forward skis carried by steerable mounting means, said snowmobile sans endless track mechanism and skis being mounted on said hull, said hull comprising a pair of transversely spaced pontoons having facing surfaces connected by a rearwardly and downwardly extending lift plate which terminates in spaced relation from the rear of the pontoons, shaft means including power take-off means to replace the sprocket shaft of the snowmobile, a shaft connected to the power take-off means and extending rearwardly and downwardly above the lift plate and mounting a propeller on the rearward end thereof, and rudder means for steering the watercraft and connected to the steerable mounting means of the snowmobile.

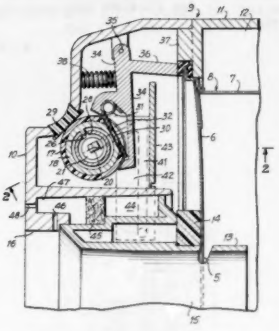
3,853,086

DEVICE FOR SIGNALLING NEED FOR CLEANING OR REPLACING SUCTION CLEANER DUST BAG

Ivar Asplund, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Feb. 9, 1973, Ser. No. 331,116
Claims priority, application Sweden, Feb. 11, 1972, 1636/72
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 AD **8 Claims**

1. A signal device for a vacuum cleaner having a motor-fan unit, a suction opening and a dust collector adjacent thereto operatively connected to said motor-fan unit comprising: a passageway having a transparent portion, means connecting one end of said passageway to the inlet side of said dust collector and means connecting the other end of said passageway to the outlet side of said dust collector, a piston movable at least in the transparent portion of said passageway in dependance upon the pressure difference between said inlet and outlet sides of said dust collector to indicate the amount of accumulation of material in said dust collector, a blocking device co-acting with said piston to retain the piston in the position reached after movement in one direction in said passageway, and means connected to said blocking device for automatically releasing the latter from said piston when the dust collector is made accessible for exchange.

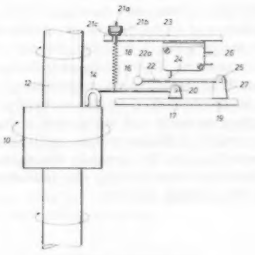


3,853,087

BEARING FAILURE INDICATOR

David B. Aldag, Clinton, Okla., assignor to Panhandle Eastern Pipe Line Company, Houston, Tex.

Filed June 29, 1973, Ser. No. 374,987
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 R **8 Claims**

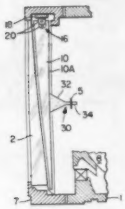


1. A bearing failure indicator for shafts comprising first and second bodies of magnetizable material at least one of which is magnetized, means attaching the first body to the shaft, means supporting the second body for movement relative to the first body due to the force imposed thereon by the magnetic field, means exerting a resilient force on the second body opposing the force of the magnetic field and holding the second body in a first position relative to the first body when the first body is in the position it occupies when the shaft is properly supported by its bearings and to move the second body to a second position relative to the first body when the first body moves due to the failure of the bearings supporting it and the shaft and means responsive to the movement of the second body to indicate the failure of the shaft support bearings.

3,853,088
ARRANGEMENT FOR SUPPORTING A SYMBOL IN AN ILLUMINATED INSTRUMENT

Albert J. Marko, Colts Neck, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed June 14, 1972, Ser. No. 262,841
Int. Cl. G09f 9/00
U.S. Cl. 116—129 R **5 Claims**



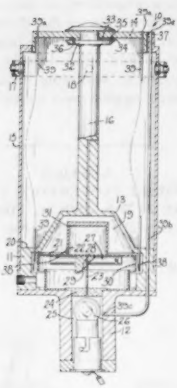
1. For use with an instrument of the type having:
an elongated case with a viewing end;
a bezel mounted to the viewing end of the case;
a vertically disposed viewing window supported within the bezel for closing the viewing end; and
indicating means supported within the case for displacement about an axis in response to a condition;
illuminating means comprising:
a light source supported within the bezel and at the top thereof;
a vertically disposed light transmitting member supported within the bezel in back of the viewing window and adjacent the light source, and having a front face adjacent said window and a rear face adjacent the indicator, said member transmitting light from the light source to the indicator means to illuminate said indicator means; and
a horizontally disposed light transmitting member supported on the rear face of the vertically disposed light transmitting member and supporting a marker between said face and the indicator means and transmitting nearby light transmitted by the vertically disposed member so as to be invisible when viewing the indicator and symbol through the viewing window.

3,853,089
COURSE SELECTOR AND INDICATOR

Bernard Howard, 73 McKinley Ave., New Haven, Conn. 06515

Continuation-in-part of Ser. Nos. 259,433, June 5, 1972, abandoned, and Ser. No. 312,918, Dec. 7, 1972, abandoned. This application Feb. 6, 1974, Ser. No. 440,197
Int. Cl. G09f 9/00
U.S. Cl. 116—129 R **32 Claims**

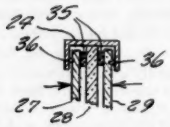
1. A course selector and indicator comprising a compass having magnetic means adapted to orient said compass toward magnetic North, a course selector rotatable to select a course adjacent a reference marker, an energy source associated with said compass means adapted to direct energy from a reference position, and transmitting means positionable with said selector adapted to transmit the energy from said reference position to a discrete position on said selector corresponding to the selected course indication when the course is achieved.



3,853,090
TIME MEMORANDUM

Sidney Y. Watson, and George Spector, both of c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Dec. 12, 1972, Ser. No. 314,452
Int. Cl. G09f 9/00
U.S. Cl. 116—133 **3 Claims**



1. A time indicating device comprising a circular disc having a clock dial face thereon said disc having a peripheral flange provided with a coaxial retaining groove spaced from said face in combination with an hour indicator disc rotatably mounted in said groove axially spaced from said face, including peripheral resilient means disposed between said discs whereby said means provides frictional resistance against inadverdant rotation, but not prevent necessary manual rotation of said time indicator disc and one of said discs is transparent.

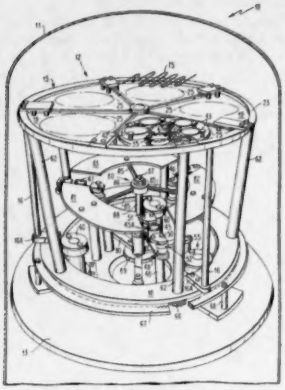
3,853,091
THIN FILM COATING APPARATUS

Richard G. Christensen, Poughquag, and Richard Wahl, Fishkill, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 3, 1973, Ser. No. 421,020
Int. Cl. C23c 13/08
U.S. Cl. 118—49 **14 Claims**

1. In an apparatus for providing multiple rotation of a plurality of semiconductor wafers about three parallel axes, said apparatus comprising: a rotatable platform; a rotatably mounted plurality of trays spaced about and mounted on said platform and in the same plane as said platform; each tray including a plurality of rotatably mounted semiconductor wafer holders; said wafer holders comprising a cup, an inwardly projecting lip extending about the periphery of said

cup, and wafer retaining means on said lip for receiving a wafer therein and holding said wafer against said lip; said retaining means comprising a clip including a radially projecting tang, resilient means connected to said tang, and means actuable interiorally of said cup for biasing said tank to main-



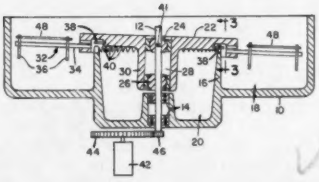
tain said tang in firm engagement with a wafer held on said lip; a plurality of source material holders radially spaced about an axis perpendicular to said platform and spaced axially therefrom; and means to effect rotation of said platform, said trays and said holders in the same plane wherein said wafers pass through several angles with respect to said sources.

3,853,092

APPARATUS FOR NUTATING AND STAINING A MICROSCOPE SLIDE

Lynn G. Amos, Raleigh, and William R. Eppes, Cary, both of N.C., assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 25, 1973, Ser. No. 409,432
Int. Cl. B05c *11/14*
U.S. Cl. 118—56 **25 Claims**



1. An apparatus for staining a microscope slide comprising microscope slide support means,

means for disposing said microscope slide on said support means in a plane tilted from horizontal,

means for rotating said support and microscope slide approximately horizontally,

means for translating said support means vertically while it is being rotated so as to impart a nutating motion to said microscope slide,

means for dispensing at least one staining reagent to the top surface of said microscope slide, said nutating motion effecting uniform wetting of said top surface of said microscope slide by each said reagent, and

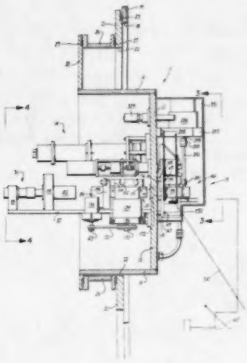
means for removing said microscope slide from said apparatus.

3,853,093

OPTICAL THICKNESS RATE MONITOR

Martin L. Baker, and Eugene A. Eufusia, both of Santa Rosa, Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Division of Ser. No. 2,789, Jan. 14, 1970, abandoned. This application Jan. 27, 1972, Ser. No. 221,363
Int. Cl. C23c *13/12*
U.S. Cl. 118—8 **16 Claims**



1. In an optical thickness rate monitor for use with a vacuum chamber having an evaporation source therein providing a vapor stream for measuring the rate of deposition of material on an article while in the vacuum chamber, means forming an aperture having one side exposed to the vapor stream from said evaporation source, an elongate transparent element spaced from the article disposed on one side of the aperture opposite the side exposed to the evaporation source, means for progressively advancing the elongate element past the aperture so that successive portions of the elongate element are coated with material from said vapor stream at the same time that material is being deposited on the article, means for supplying a beam of radiation to the element so that the radiation is affected by the material deposited on the element from the vapor stream and means for determining the manner in which the radiation is affected by the material deposited on the element to determine the rate of deposition of the coating material solely by determination of optical properties of the coating material.

3,853,094

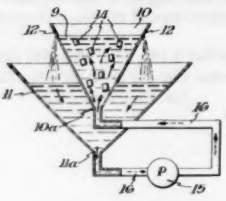
ELECTROLESS PLATING APPARATUS

Theodore P. Christini, Kennett Square, Pa.; William P. Flynn, Wilmington, Del.; John B. Inskeep, Wilmington, Del., and Harry J. McCauley, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 25, 1971, Ser. No. 103,355
Int. Cl. B05c *3/04*
U.S. Cl. 118—417 **2 Claims**

1. Apparatus for concomitant particulate deposition in electroless plating comprising, in combination, a vertically oriented frusto-conical vessel, an electroless plating solution pump connected with discharge port in communication with

the small diameter end of said frusto-conical vessel, a receiving vessel connected in open fluid communication with the



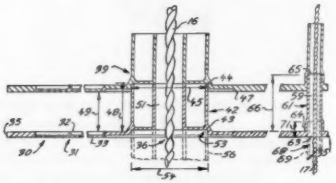
large end of said frusto-conical vessel, and means connecting said receiving vessel to the intake side of said pump.

3,853,095

ARTIFICIAL CULTCH FOR OYSTERS

Kenneth George Lawrence, 1734 Harper Dr., Prince George, British Columbia, Canada

Filed June 15, 1973, Ser. No. 370,368
Int. Cl. A01k *61/00*
U.S. Cl. 119—4 **12 Claims**



1. An artificial oyster cultch for collecting oyster spat, the cultch being adapted for use with similar cultches to form a cultch assembly, the cultch including:

a. a generally plane flexible base having; first and second faces, an edge defining a periphery of the base, and a bore,

b. a grid of intersecting ridges disposed on both faces of the base, the ridges being disposed so that a ridge extending from one face of the base has a corresponding ridge extending from an opposite face of the base, the ridges on each face defining opposed recesses disposed on either face of the base, the base of each recess having a connecting bore extending therethrough, the ridges extending outwardly from the face of the base a distance defining depth of the recesses.

3,853,096

SMALL ANIMAL FEEDER

Albert J. Whitty, 39055 Lyndon, Livonia, Mich. 48154

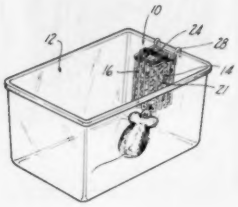
Filed Mar. 16, 1973, Ser. No. 341,982
Int. Cl. A01k *05/00*
U.S. Cl. 119—18 **9 Claims**

1. An animal feeder for containing pelletized animal food of predetermined dimensions comprising:

an enclosure having a closed peripheral rim defining a top opening, a front wall of parallel spaced apart elongated members, a back wall of parallel spaced apart elongated members, two side walls of parallel spaced apart members, and a base of two mutually perpendicular groups of parallel spaced apart elongated members forming a gridwork, each of said members of one group of parallel spaced apart elongated members being integral with a different one of said parallel spaced apart members of said first side wall and a different one of said parallel spaced apart members of said second side wall, each of said members of the other group of parallel spaced apart elongated members being integral with a different one of said parallel spaced apart members of said front wall and said closed peripheral rim being affixed to the ends of said parallel spaced apart elongated members of said front wall, said back wall and said side walls at the opposite end of said enclosure from said base;

a top structure to close said top opening having a hinge member on one side operatively associated with said closed peripheral rim, and a latch disposed on an opposite side from said hinge to engage said peripheral rim to secure said top structure in place over said opening;

hook means disposed on said back wall to secure said animal feeder to a structure which confines an animal;



said mutually peripendicular groups of parallel elongated members forming said gridwork base being secured together at their cross-over points;

said hook means comprising at least two hooks, each of said hooks being integral with a different one of said parallel spaced apart elongated members of said back wall and extending above said top opening; and

the width of the space defined between adjacent parallel elongated members of said front wall, said back wall, said side walls and said base being approximately 0.375 inches, said elongated members of said front wall, said back wall, said side wall and said base being approximately 13 gauge, and said closed peripheral rim being approximately 9 gauge.

3,853,097

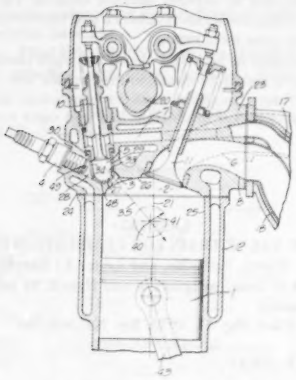
TORCH NOZZLE ORIENTATION FOR INTERNAL COMBUSTION ENGINE

Tadashi Kume, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha (Honda Motor Co., Ltd.), Tokyo, Japan

Continuation-in-part of Ser. No. 292,995, Sept. 28, 1972, abandoned. This application Apr. 23, 1973, Ser. No. 353,785
Int. Cl. F02b *19/10, 19/16*
U.S. Cl. 123—32 SA **2 Claims**

1. In a spark-ignition internal combustion engine for minimizing unwanted emissions such as HC and CO, the engine having a crank-connected piston movable in a cylinder bore, the combination of: walls cooperating with the movable piston to form a main combustion chamber, walls forming a cavity laterally offset from the cylinder axis, a thin wall heat resistant cup positioned within the cavity and having a portion exposed to the main combustion chamber, said portion of said cup having an aperture constituting the sole torch nozzle restriction establishing communication between said chambers, a spark plug for igniting a combustible mixture in the auxiliary chamber to project a flame through the torch nozzle restriction, the torch nozzle restriction being positioned to cause the axis of the torch flame to pass near the center of mass of the

air-fuel mixture in the main chamber when the piston is 90° past top dead center, the axis of the torch flame being spaced



from said center of mass by an amount no greater than 16/100 of the diameter of the cylinder bore.

3,853,098

DRIVING SYSTEM FOR AUTOMOBILE ENGINE COOLING FAN

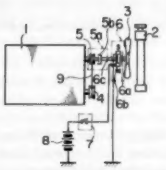
Toshio Ishikawa, Kariya, and Mituzi Ohshima, Oobu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya-shi, Aichi-ken, Japan

Filed Sept. 21, 1973, Ser. No. 399,497

Claims priority, application Japan, Oct. 5, 1972, 47-100479; Nov. 1, 1972, 47-109725

Int. Cl. F01p *7/02*

U.S. Cl. 123—41.11 **8 Claims**



1. In a driving system for an automobile engine cooling fan comprising a radiator, and a cooling fan driven by an engine to draw cooling air through the radiator, the improvement comprising a first one-way clutch provided between said cooling fan and said engine to allow the transmission of driving power in only one direction from said engine to said cooling fan, a motor coupled to drive said cooling fan, a motor control means for controlling a supply of electric power to said motor.

3,853,099

ELASTOMERIC SEALING RING FOR CYLINDER LINERS

Glen N. Feather, Dunlap; Harry M. Kiley, and William A. Nelson, both of Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 21, 1972, Ser. No. 317,416

Int. Cl. F02f *1/36*

U.S. Cl. 123—41.82 **1 Claim**

1. In an internal combustion engine having a cylinder block, a cylinder head mounted on said block, a cylindrical bore formed in said block, a cylindrical one-piece liner mounted in said bore and having an upper, radial flange seating on a top surface of said block and an axially spaced lower radial flange defining an annular groove therebetween, said lower flange having a free end closely fitted within said bore, interconnecting passage means defined in said block and said head around said liner for continuously circulating a coolant therethrough during engine operation, said passage means further including a venturi throat means solely defined between said lower radial flange and said liner, closely adjacent to and below said sealing means, to increase the velocity of coolant flow therethrough and further including a pair of gaskets and a spacer

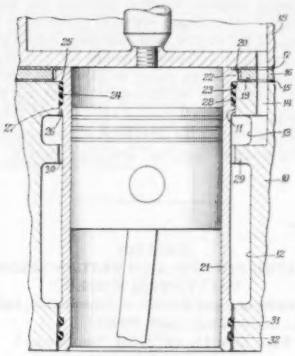


plate sandwiched between said gaskets, said gaskets and spacer plate mounted between said block and head and having aligned openings therein which serve as a continuation of said passage means between said block and head, an elastomeric sealing ring disposed in said annular groove and compressed between siad block and said liner, adjacent to said head preventing the passage of coolant between said seating and said free end and said bore.

3,853,100

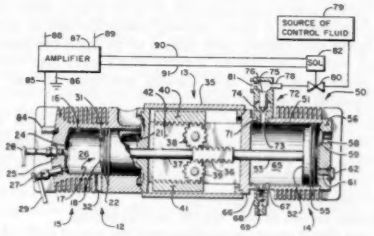
FREE PISTON ENGINE WITH ANTIKNOCK MEANS

Anton Braun, 6421 Warren Ave., Edina, Minn. 55435

Filed Feb. 16, 1973, Ser. No. 332,988

Int. Cl. F02b *71/00*; **F02d** *39/10*

U.S. Cl. 123—46 R **16 Claims**



1. A free piston engine comprising:

a power cylinder having a power piston reciprocally movable in said cylinder and defining an internal combustion chamber with said power cylinder, and means for introducing air and fuel into said power cylinder between said piston and the head of said cylinder to form a mixture therein consisting of fuel and air, said piston being movable toward the head of said cylinder to compress the fuel mixture on a compression stroke and away from said head upon firing of the fuel mixture,

return energy means operatively connected to said piston for applying return energy to said piston, said means being effective to apply sufficient return energy to said piston following the firing stroke of said engine to cause said piston to move towards the head of said power cylinder to compress the fuel mixture to the desired extent,

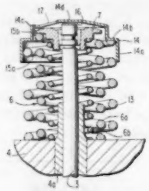
and controlling means for so varying the amount of the return energy applied to said piston as to prevent sustained knocking of the engine, said controlling means comprising a condition responsive means having a condition sensing element located adjacent the engine and responsive to a condition normally followed by sustained knocking of the engine, and adjusting means controlled by said condition responsive means for variably controlling said return energy means to adjust the return energy in a direction and by an amount sufficient that the resulting change in the compression ratio in said cylinder will, without interrupting the operation of said engine, prevent the occurrence of sustained knocking thereof.

3,853,101

INTEGRATED ROCKER ARM RETURN SPRING AND VALVE STEM SHIELD

Edward Iskenderian, and Ronald M. Iskenderian, both of 5210 Holt Ave., Los Angeles, Calif. 90056

Filed May 15, 1973, Ser. No. 360,617
Int. Cl. F01l 1/32
U.S. Cl. 123—90.28 **5 Claims**



1. In an internal combustion engine valve system comprising engine valve means including valve rod means;

first spring means, cooperating with said valve rod means, and biasing said engine valve means to a closed condition; rocker arm means operable to move from a valve closing condition to a valve opening condition and in so doing move said engine valve means to an open condition;

cam means operable to actuate said rocker arm means to move from said valve closing condition to said valve opening condition; and

second spring means, independent of said first spring means, and operable to bias said rocker arm means away from said valve opening condition to said valve closing condition;

the improvement comprising:

shroud means in said system and including

top shield means extending over the top of said valve rod means, and

said second spring means being characterized by

precompressed coil spring means,

said precompressed coil spring means engaging said shroud means and causing said shroud means to continuously engage said rocker arm means and continuously urge said rocker arm means away from said valve opening condition towards said valve closing condition, while said valve means is in each of said closed and open conditions;

coil spring action isolating means operable to maintain the biasing action of said coil spring means on said shroud means continuously effective and continuously independent of the position of said valve rod means relative to said coil spring means while said valve means is in both said closed and open conditions;

means operable to prevent laterally directed rigid, force transmitting, cooperation between said rocker arm means and said valve stem means;

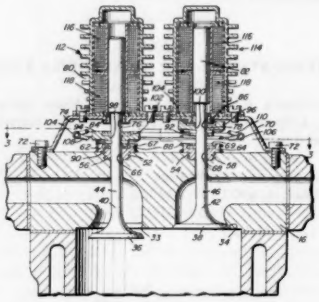
means operable in both said closed and open conditions of said valve means to continuously provide and maintain lateral force absorbing, resilient connection means between said rocker arm means and said valve rod means.

3,853,102

MAGNETIC VALVE TRAIN FOR COMBUSTION ENGINES

Charles W. Myers, Nashville, and Lester E. Harvill, Centerville, both of Tenn., assignors to said Harvill, by said Myers, a part interest

Filed May 31, 1973, Ser. No. 365,750
Int. Cl. F01l 1/16
U.S. Cl. 123—90.49 **4 Claims**



1. In combination with an engine cylinder and an upstanding valve therefor including an elongated stem portion longitudinally shiftable between first and second positions relative to vertically spaced stationary portions of said engine spaced along said stem portion, valve actuating force means operatively associated with said valve for yieldingly biasing said stem portion between said first and second positions, the lower stationary portion of said engine defining an upwardly opening lower cup through the center of which said stem portion extends and the upper stationary portion of said engine defining a downwardly facing upper piston portion through the center of which said stem portion extends, body means carried by said stem portion for movement therewith defining an upwardly opening upper cup portion below said upper stationary portion extending about said stem portion and a downwardly facing lower piston portion centrally through which said stem portion projects, said upper piston portion being loosely at least substantially fully telescopingly seated into said upper cup portion when said stem portion is in said upper position and said lower piston portion being loosely at least substantially fully telescopingly seated in said lower cup portion when said stem portion is in said lower position, said upper and lower piston portions, when said stem portion is in said upper and lower positions, respectively, being fully retracted from telescopic engagement in said upper and lower cup portions, and means operative to direct a discharge of oil into said cup.

3,853,103

IGNITION TIMING CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINE IGNITION SYSTEMS

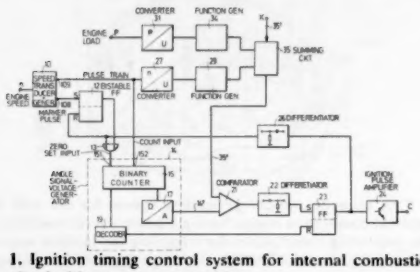
Josef Wahl, Stuttgart, and Wolf Wessel, Schwieberdingen, both of Germany, assignors to Robert Bosch GmbH, Gerlingen-Schillerhohe, Germany

Filed Feb. 28, 1973, Ser. No. 336,823

Claims priority, application Germany, June 10, 1972, 2228387

Int. Cl. F02p *5/08*

U.S. Cl. 123—117 R **17 Claims**



1. Ignition timing control system for internal combustion engine ignition systems comprising

pulse generator means (**10**) providing output pulses synchronized with engine rotation;

a control signal generation means (**10, 27, 29; 31, 34; 35**) providing a signal representative of engine operation, operating, or environmental parameters;

a binary counter (**15**) connected to the pulse generator means and counting in synchronism with engine rotation; counter start means (**108, 12, 13**) connected to said pulse generator means (**10**) and generating a marker pulse representative of a predetermined angular position of the crankshaft, said counter start means being connected to said counter (**15**) to start a counting cycle thereof;

a comparator means (**21**) having one input connected to the output of the counter (**15**) and another input connected to the output of the control signal generation means to compare the timed occurrence of a predetermined pulse count with the value of the control signal and providing an output ignition pulse forming a start signal to initiate an ignition pulse in accordance with angular position of the crankshaft as determined by the count of the counter and the value of the control signal representative of said parameter;

means (**23, 26**) connected to said comparator means (**21**) and sensing occurrence of said start signal, and connected to reset said counter (**15**) upon sensing said start signal, said counter thereby starting a second count cycle;

and preset means connected to said counter and establishing a predetermined count number of said counter, said counter, when reaching said predetermined count number, providing a counter stop pulse forming a stop signal to terminate the ignition pulse.

3,853,104

SYSTEM FOR VAPORIZING AIR-FUEL MIXTURE SUPPLIED TO CYLINDERS OF AN INTERNAL COMBUSTION ENGINE FOR A MOTOR VEHICLE

Shyuya Nambu, Yokohama, Japan, assignor to Nissan Motors Company, Limited, Yokohama, Japan

Filed Feb. 6, 1973, Ser. No. 330,069

Claims priority, application Japan, Feb. 7, 1972, 47-13870

Int. Cl. F02m *31/00*

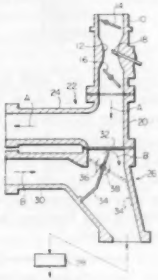
U.S. Cl. 123—122 H **2 Claims**

1. A system for vaporizing air-fuel mixtures supplied to cylinders of an internal combustion engine for a motor vehicle, the internal combustion engine having means for supplying the air-fuel mixtures, each of the cylinders being provided with an intake valve and an exhaust valve, which system comprises,

an intake manifold communicating with said air-fuel mixture supply means and communicable with said cylinders via said intake valves for distributing said mixtures to said cylinders,

an exhaust manifold havibg a first set of exhaust branch passages communicable with predetermined cylinders selected from said cylinders via the exhaust valves thereof and a second set of exhaust branch passages communicable with the remaining cylinders via the exhaust valves thereof, said first and second sets of exhaust branch passages being communicable with the atmospheric air,

means for raising the temperature of the exhaust gases flowing through said first set of exhaust branch passages and comprising a first means for providing normal ignition timing to said remaining cylinders and a second means for providing retarded ignition timing to said predetermined cylinders when said engine is running below a predetermined speed,



said first means including a DC power source, a first ignition coil having a primary winding and a secondary winding, said primary winding being connected at one terminal thereof with said DC power source and said secondary winding being connected at one terminal thereof selectively with the ignition plugs of said remaining cylinders and a first ignition distributor having an interruptor connected to the other terminals of said first and secondary windings, said first ignition distributor being arranged to provide normal ignition timing, and

said second means including a second ignition coil having a primary winding and a secondary winding, said primary winding of said second ignition coil being connected at one terminal thereof with said DC power source and said secondary winding of said second ignition coil being connected at one terminal thereof selectively with ignition plugs of said predetermined cylinders and a second ignition distributor having an interruptor being connected to the other terminals of said first and secondary windings of said second ignition coil, said second ignition distributor being arranged to provide retarded ignition timing when said engine is running below said predetermined speed and to provide normal ignition timing when said engine is running above said predetermined speed.

3,853,105

INSUFFLATOR GAS FLOW DEVICE

Paul E. Kenagy, 2245 Richey Dr., La Canada, Calif. 91011

Continuation of Ser. No. 208,688, Dec. 16, 1971, , which is a continuation-in-part of Ser. No. 60,524, Aug. 3, 1970, abandoned. This application Sept. 4, 1973, Ser. No. 393,746

Int. Cl. A62b *7/02*

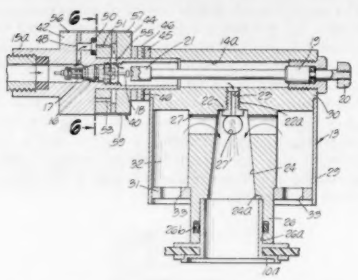
U.S. Cl. 128—145.8 **13 Claims**

1. In a device to provide a therapeutic gaseous mixture for inhalation by a patient, wherein the device has an inlet port to receive a pressurized therapeutic gaseous fluid and has a breathing port for use by the patient, the combination of:

a venturi throat having its downstream end in communication with the breathing port;

a nozzle at the upstream end of the venturi throat to direct a jet stream of the pressurized therapeutic gaseous fluid into the venturi throat;

at least one vent port to the atmosphere in the wall of the venturi throat near the jet stream from the nozzle to serve three purposes, namely: to induce atmospheric air into



the venturi throat to mix with the gaseous therapeutic fluid when the device functions to fill the lungs of the patient; to vent the therapeutic fluid from the venturi throat to the atmosphere when the filling of the patient's lungs creates a back pressure in the venturi; and to permit the patient to exhale into the atmosphere; and

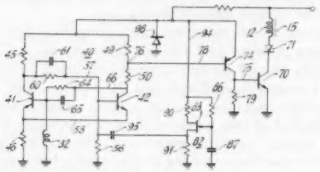
metering means in direct communication with said nozzle to release the pressurized therapeutic fluid to the nozzle at a constant reduced rate.

3,853,106

HIGH FREQUENCY CONTINUOUS-WAVE IGNITION ENERGY FOR AN INTERNAL COMBUSTION ENGINE

Robert E. Canup, Richmond, Va., assignor to Texaco Inc., New York, N.Y.

Filed Aug. 27, 1970, Ser. No. 67,450
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 E **9 Claims**



1. In a high frequency continuous-wave ignition system for an internal combustion engine, said system employing a control winding for starting and stopping said high frequency continuous-wave energy, and having a shaft for timing said energy relative to said engine,

improved means for controlling current flow through said winding in accordance with a predetermined amount of shaft angle rotation, comprising in combination

electromagnetic means associated with said shaft for providing an initial pulse of one polarity and a terminal pulse of the opposite polarity separated by a predetermined degree of shaft angle rotation and both pulses for each cylinder of said engine, and

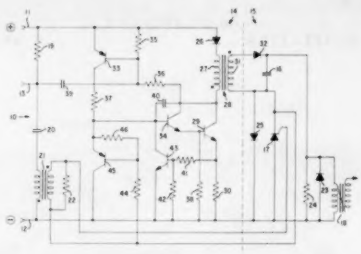
bistable oscillator means actuated by both said pulses for cutting off said current flow when said initial pulse appears and for restoring said current flow when said terminal pulse appears.

3,853,107

CAPACITIVE DISCHARGE IGNITION SYSTEM

Norman Francis Sieja, Toledo, Ohio, assignor to Eltra Corporation, Toledo, Ohio

Filed Jan. 11, 1973, Ser. No. 322,789
Int. Cl. F02p *3/06*
U.S. Cl. 123—148 E **4 Claims**



1. A capacitive discharge ignition system for use with an internal combustion engine having a power source and means for producing timed pulses for triggering the ignition system comprising, in combination, a storage capacitor, a voltage step-up transformer having primary and secondary windings mounted on a core, a controlled conduction device having input, output and control electrodes, means connecting said primary winding, said input electrode and said output electrode in series, means for connecting said series connected transformer and controlled conduction device to the power source, means connected to said control electrode responsive to each trigger pulse for switching said controlled conduction device to a conducting state whereby current flows from the power source through said primary winding and said controlled conduction device to store energy in said transformer core, first means connected to said control electrode responsive to an increasing current flow through said series primary winding and controlled conduction device for increasing the impedance of said controlled conduction device to limit current flow through said controlled conduction device to a predetermined maximum level whereby the total energy stored in said core is regulated, second means responsive to the voltage across said primary winding dropping to a predetermined minimum as the current through said primary winding increases to said predetermined maximum level for switching said controlled conduction device to a nonconducting state whereby a collapsing magnetic field in said core establishes a predetermined high voltage across said secondary winding, means for charging said capacitor with such secondary voltage, means responsive to each trigger pulse for discharging said capacitor, and means responsive to the discharge of said capacitor for generating a high voltage for firing a spark plug.

3,853,108

SOLID STATE IGNITION

Guy Adams, Monroe, and Joseph Defilippis, Wappingers Falls, both of N.Y., assignors to Solitron Devices, Inc., Tappan, N.Y.

Filed Mar. 12, 1973, Ser. No. 340,015
U.S. Cl. 123—148 E **14 Claims**

1. An ignition system including a sensor means operatively associated with a circuit including devices to amplify, define and switch current in accordance with a pulse from said sensor means and ignition coil means for delivering a high potential spark from said ignition system as called for by said semiconductor means said ignition system comprising the improvement to said sensor means of:

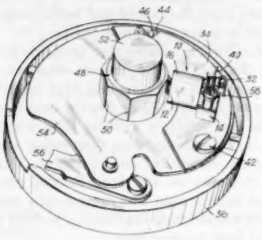
a permanent magnet;

a pickup arm connected to said magnet at one pole surface thereof having a plurality of plates of progressively lesser

length at one end to form a triangle on said end whose apex is along a centerline for said pickup arm;

a coil around said arm having leads extending therefrom to sense inductance change in said arm and provide an alternating current potential wave form as said inductance rises and falls; and

electronic means (adjacent said arm and connected to each of the leads from said coil and to each other to track together and provide a temperature compensated source



of signals for said circuit) comprising transistors affixed to said pick-up arm having their respective bases connected to each of said leads, their collectors connected to each other by a resistance means and to one side of a power source, a resistor connected between the collector of one transistor and to the lead to the base connection of one of said transistors and having their emitters connected together with a lead therefrom to the other side of said power source.

3,853,109

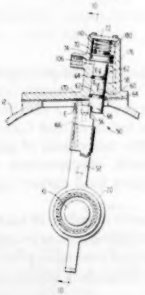
METHOD AND APPARATUS STARTING AN INTERNAL COMBUSTION ENGINE

James L. Dooley, Santa Monica, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Apr. 24, 1973, Ser. No. 354,086

Int. Cl. F02n *5/02*

U.S. Cl. 123—179 S **5 Claims**



1. An apparatus for controlling a starter spring for an internal combustion engine having at least an engine casing and a crankshaft said apparatus including:

arbor means rotatingly mounted on said crankshaft and connected thereto by one-way clutch means;

said arbor means, crankshaft and one-way clutch means being arranged so that torque may be transmitted only from said arbor means to said crankshaft;

spring casing means mounted to rotate freely upon said arbor means;

a first end of the starter spring being connected with said arbor means and a second end of the starter spring being connected with said casing means;

starter spring release means for releasing said arbor means to drive the crankshaft under the bias of said starter spring through said one-way clutch means for starting the internal combustion engine said release means including an arbor arm radially extending from said arbor means;

an arbor arm stop means connected to the engine casing and operatively translatable into and out of engagement with said arbor arm;

hydraulic means for automatically translating arbor arm stop means into engagement with said arbor arm to stop rotation of said arbor means and permit said starter spring to be rewound following the starting of the internal combustion engine;

means operatively connected to said spring casing means for permitting unidirectional rotation thereof;

a starter spring rewind drive train for operably connecting said crankshaft with said spring casing means to automatically rewind said starter spring upon starting of the internal combustion engine; and

hydraulic means for automatically disengaging said starter spring rewind drive train from operative engagement with said crankshaft upon rewinding said starter spring to a wound condition wherein the improvement comprises:

a hydraulic cylinder connected to the engine casing;

a piston positioned within said cylinder and connected to said arbor arm stop means; and

hydraulic means connected to a fuel primer system for said internal combustion engine and said hydraulic cylinder for actuating said piston to disengage said arbor arm stop means from said arbor arm thus releasing said arbor means to drive the engine crankshaft for starting the internal combustion engine upon said fuel primer system being primed to a predetermined desired pressure sufficient to insure starting fuel flow.

3,853,110

OIL PRESSURE DETECTOR

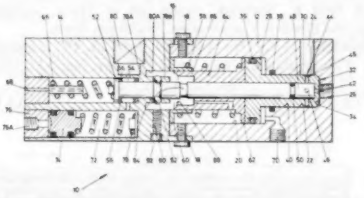
Izak Francois van der Merwe, 10, The Eildons 2nd Ave., Kenilworth, Cape Town, South Africa

Filed Mar. 12, 1973, Ser. No. 340,012

Claims priority, application South Africa, Mar. 16, 1972, 72/1822

Int. Cl. F02b *77/00*

U.S. Cl. 123—198 DB **15 Claims**



1. A safety device for a fuel driven engine which is lubricated by liquid lubricant under pressure and comprising a first operating member; a first spring acting on the first operating member to bias the latter into a first position; a pressure sensitive device adapted to be subject to the pressure of the liquid lubricant and being connected to the first operating member to move the latter from its first position to a second position when the pressure of the lubricant is more than a predetermined minimum; a second operating member normally movable freely relative to the first operating member from a first position to a second position; second spring means

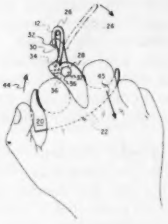
for biassing the second operating member into its first position; and detector means for detecting when a predetermined operation has taken place and for moving the second operating member into its second position when such predetermined operation has taken place, further comprising locking means for locking the second operating member in its second position, which locking means is controlled by he first operating member when in its second position.

3,853,111

ADJUSTABLE BOWSTRING RELEASE FOR ARCHERY BOW

Melvern B. Stanislawski, 7135 S.E. Cora St., Portland, Oreg. 97206, and Daniel F. McKinney, 1427 Coquette St., Medford, Oreg. 97501

Filed Feb. 25, 1974, Ser. No. 445,589
Int. Cl. F41c *19/00;* **F41b** *5/00*
U.S. Cl. 124—35 **7 Claims**



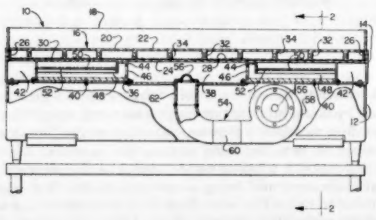
1. A rope release for use with an archery bow comprising a grip adapted for grasping by the bowstring-drawing hand and configured with a pair of recesses for receiving portions of the forefinger and middle finger of the hand, a flexible cord loop whose terminal ends are attached to said grip, and a pin member projecting from said grip having a hook termination at one end adapted to releasably engage the bight portion of said loop and whose other end is attached to said grip between said recess pair, and adjustment means for permitting the angle of projection between said pin member and said grip to be varied to regulate the point at which said loop is freed from said hook termination during the squeezing of a user's finger on the rope release.

3,853,112

VAPOR TRANSFER FOOD PREPARATION AND HEATING APPARATUS

Lazaros J. Lazaridis, Lincoln; Edward F. Searight, Harvard, and Paul K. Shefsiek, Acton, all of Mass., assignors to Thermo Electron Corporation, Waltham, Mass.

Continuation of Ser. No. 165,569, July 23, 1971, abandoned. This application Feb. 16, 1973, Ser. No. 333,236
Int. Cl. A21b *1/28*
U.S. Cl. 126—19 **14 Claims**



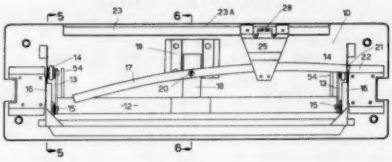
1. Food preparation griddle apparatus comprising:
a. means forming a sealed enclosure substantially purged of fluids which are non-condensible over the working temperature range and having along a portion thereof a food heating zone and a heat receiving zone;
b. working fluid means, said fluid in the liquid phase partially filling said sealed enclosure through said range;
c. means forming a combustion chamber;
d. means for admitting air and fuel to said combustion chamber to provide thereto a combustible mixture;
e. baffle means external of said enclosure having jet forming perforations therein and extending along said heat receiving zone closely adjacent thereto to form plenum chamber means along the side of said baffle means facing away from said heat receiving zone; and
f. means for forcing combustion products from said combustion chamber to said plenum chamber, then through said perforations and onto said heat receiving zone as a plurality of discrete jets to thereby heat said heat receiving zone and vaporize working fluid within said sealed enclosure, whereby working fluid vapor substantially fills said sealed enclosure and condenses internal of said sealed enclosure on said food heating zone for heating said food heating zone to a substantially uniform temperature and transmitting heat energy to food material adjacent said food heating zone.

3,853,113

HEIGHT-ADJUSTABLE GRILLER

Bruce Alfred Burford, Fulham, Australia, assignor to Simpson Pope Limited, Dudley Park, Australia

Filed June 28, 1973, Ser. No. 374,755
Claims priority, application Australia, July 4, 1972, 9560/72
Int. Cl. A47j *37/04*
U.S. Cl. 126—41 E **4 Claims**

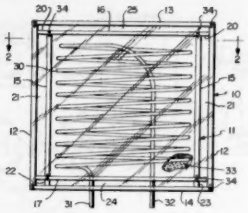


1. A food griller of the kind comprising an open-front oven compartment, heating means in said compartment, a facia panel able to close the open-front of said compartment, a food carrier mounted on the inside of said facia panel, and guideways enabling drawer-like movement of said facia panel relative to said compartment; characterised in that said facia panel is hollow and houses food carrier support means comprising:
a. a food carrier support member in said facia panel which has food carrier mounting lugs extending through vertical slots in the rear face of said facia panel, and is restrained against movement other than vertical movement relative to said panel;
b. a follower ramp which is pivoted by one end on and within said panel, and upon which said support member is suspended;
c. a traverser bracket having a camming element engaging said follower ramp;
d. means to restrain said traverser bracket against movement other than horizontal movement laterally of and within said panel; and,
e. a handpiece on said traverser bracket which extends through a slot formed in the front face of said panel to project outside thereof.

3,853,114
SOLAR HEAT ABSORBER

George R. Gaydos, Jr., R.R. Box 3798, Upper Marlboro, Md. 20870

Filed Mar. 11, 1974, Ser. No. 450,208
Int. Cl. F24j *3/02*
U.S. Cl. 126—271 3 Claims



1. An apparatus for utilizing solar radiation energy to heat a fluid comprising

a first internal container having transparent substantially vertical side walls and top and bottom walls defining a closed interior cavity;

a second external container having transparent vertical side walls and top and bottom walls,

the walls of said external container being larger than the walls of said first container;

means for supporting said internal container within said external container with the walls of said containers in substantially parallel, spaced relationship defining air-containing spaces therebetween;

fluid conducting means contained within said internal container in heat exchanging relationship with the interior cavity thereof;

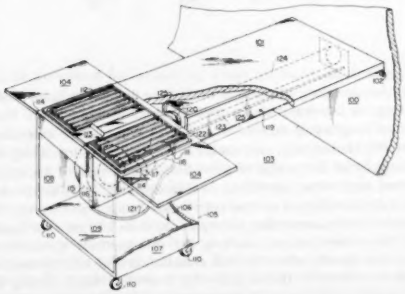
conduit means passing through one of said walls and connecting to said fluid conducting means for conducting heated fluid to a remote location; and

particulate radiation and heat absorbing material contained within said internal container, surrounding said fluid conducting means and substantially filling said interior cavity.

3,853,115
DINING ARRANGEMENT

Louis Joseph Jenn, 3035 Shadeland Ave., Indianapolis, Ind. 46226

Filed Sept. 20, 1973, Ser. No. 399,334
Int. Cl. F24c *7/04*
U.S. Cl. 126—299 B 15 Claims

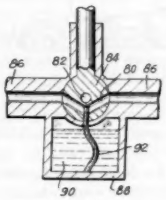


1. A dining arrangement such as for a restaurant wherein dining tables are provided for option partial self service by table occupants in the broiling of meats comprising: tables spaced about a room and having open air broiler means located in their tops; a peripheral portion of each table top about the broiler means defining a dining surface around and under which chairs are adapted to be assembled; a duct common to said dining tables and having an exit opening outside of the room; said broiler means including air conduit means having an air intake at one side of the broiler and an air exit opening into said common duct; power driven fan means fluid associated with the conduit means and common duct for drawing a stream of air laterally across the broiler surface into the intake for collecting smoke and odor laden gases caused by broiling meat on the broiler, moving the air through the conduit means and common duct and exhausting the air through said common duct air exit exteriorly of the room; at least some of said tables being divided into a stationary portion having a dining surface around and under which chairs are adapted to be assembled and a separate portable portion having said open air broiler means; and said portable portion including a base having anti-friction means for supporting it on the floor adjacent said stationary table portion as a portable module for movement between various stationary table portions and having means for fixedly mounting thereon said broiler means.

3,853,116
IMPLANT METHODS AND DEVICES FOR INFLUENCING BODY FLUIDS

Louis Bucalo, Holbrook, N.Y., assignor to Investors In Ventures, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 155,141, June 21, 1971, Pat. No. 3,742,933. This application July 2, 1973, Ser. No. 375,359
Int. Cl. A61b *19/00*
U.S. Cl. 128—1 R 16 Claims



1. In a method for controlling body fluid in a body cavity of a living being, the steps of situating in the body cavity of the living being an implant which receives the body fluid which is to be controlled and which has in its interior an agent which is contacted by the body fluid and which influences at least a component of the body fluid, and placing in communication with the implant a reservoir containing a relatively large supply of said agent for replenishing the latter, so that the influence of the agent on the component of the body fluid can be maintained effective over a long period of time.

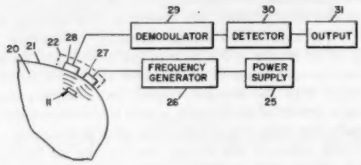
3,853,117
PRESSURE SENSING SYSTEM AND METHOD

William C. Murr, Piedmont, Calif., assignor to Berkeley Bio-Engineering, Inc., Berkeley, Calif.

Filed May 15, 1972, Ser. No. 253,058
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 V 2 Claims

1. A system for determining the pressure within a pressured body comprising transducer means adapted to be placed on the exterior of said body to direct an interrogating sonic signal into said body; passive sonic transponder means adapted to be implanted within said body having a mechanical and sonic resonant frequency varied by said pressure within said body, said transponder means being caused to resonate by receiving said interrogating sonic signal and emitting a different sonic

resonance signal; sonic receiver means adapted to be placed on the exterior of said body to receive said sonic resonance



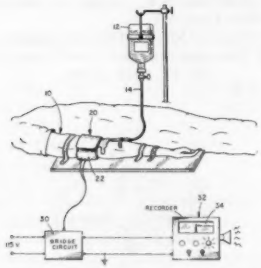
signal; and output means connected to said sonic receiver means to convert said sonic resonance signal to data related to said pressure within said pressured body.

3,853,118

SWELLING DETECTOR

Robert E. Schendel, Houston, Tex., assignor to Measurand Systems, a division of Newpark Resources, Inc., New Orleans, La.

Filed Aug. 29, 1973, Ser. No. 392,848
Int. Cl. A61b *5/10*
U.S. Cl. 128—2 S **1 Claim**



1. In a method for delivering a liquid through a needle into a blood vessel of a patient's arm whereby under normal conditions the needle remains in the blood vessel and the liquid is fed into the blood circulation system of the patient, and under abnormal conditions, the needle withdraws from the blood vessel thereby causing the supplied liquid to spread into adjacent tissues, the spreading of the liquid resulting in swelling of the arm, said method comprising:

attaching a band around said arm near said needle, the band containing a fluid chamber, the pressure of said fluid in said chamber increasing with the swelling of said arm,

coupling a pressure transducer to said chamber for detecting the pressure increase in said chamber, and converting the pressure increase to a warning signal of said abnormal conditions.

3,853,119

METHOD AND SYSTEM FOR DISPLAY OF ELECTROCARDIOGRAPHIC (ECG) SIGNALS

Ronald Thomas Peterson, and Israel Mayer Stein, both of Boston, Mass., assignors to Clinical Data Services, Inc., Brookline, Mass.

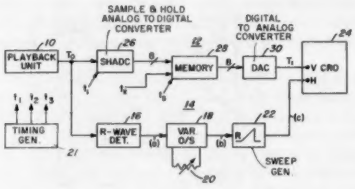
Filed Oct. 19, 1973, Ser. No. 407,825
Int. Cl. A61b *5/04*
U.S. Cl. 128—2.06 R **11 Claims**

1. A method of displaying analog ECG signals with the aid of an oscilloscope which has a time base input and an amplitude input, said method comprising the steps of

a. digitizing said signals to provide a first digital output upon each corresponding recurring portion thereof and a plurality of second digitally coded signals each corresponding to a successive amplitude increment thereof,

b. storing said second signals each for predetermined periods of time,

c. reconverting said second signals into their analog ECG signal form,



d. applying said reconverted second signal to the amplitude input of said oscilloscope,

e. generating a time base signal synchronous with said first digital output, and

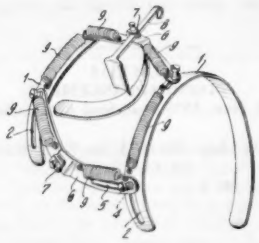
f. applying said time base signal to the time base input of said oscilloscope.

3,853,120

AUXILIARY APPARATUS FOR GYNECOLOGICAL SURGERY

Gilberto Xando Batista, Rua Catucaba 67, Alto da Boa Vista, Sao Paulo, Brazil

Filed Apr. 18, 1973, Ser. No. 352,448
Claims priority, application Brazil, June 9, 1972, 003698
Int. Cl. A61b *17/02*
U.S. Cl. 128—20 **7 Claims**



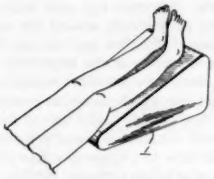
1. An auxiliary apparatus for gynecological surgery comprising, in combination, a pair of flexible side bands each curved lengthwise thereof in a plane of curvature extending centrally therealong, and each havine one end turned slightly outwardly of the plane of curvature; and a pair of arcuately curved transverse members, having opposite ends adjustably pivotally connected to respective side bands, one transverse member interconnecting the opposite ends of said side bands and the other interconnecting the intermediate portions of said side bands; whereby said side bands and said transverse members form a frame defining a central field having an adjustable opening; each transverse member having a respective clamping means at substantially its midpoint for adjustably receiving and clamping the arm portion of a surgical retractor blade having a blade portion at one end.

3,853,121

METHODS FOR REDUCING THE RISK OF INCURRING VENOUS THROMBOSIS

Benjamin Mizrachy, 14 Brewester Dr., Middletown, N.Y. 10940, and Robert Stephen Salzman, 27 Holbrook Dr., Stamford, Conn. 06906

Filed Mar. 7, 1973, Ser. No. 338,813
Int. Cl. A61h *1/00*
U.S. Cl. 128—33 12 Claims



1. A method of reducing the risk of incurring venous thrombosis in the legs of operative, bedridden and post-operative patients, comprising the steps of:

A. supporting the legs of the patient so as to allow the legs to receive external stimuli during surgery;

B. anesthetizing the patient for the purpose of performing surgery; and

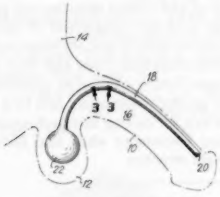
C. applying external stimulation to at least one leg of said patient while so anesthetized during surgery, so as to aid muscular activity in said leg, thereby reducing the risk of incurring venous thrombosis.

3,853,122

METHOD AND DEVICE FOR ACHIEVING A PENILE ERECTION

Berish Strauch, 3353 Bainbridge Ave., Bronx, N.Y. 10467; Allan E. Bloomberg, 340 E. 64th St., New York, and Selwyn Z. Freed, 111 E. 210th St., Bronx, both of N.Y. 10021

Filed Oct. 12, 1973, Ser. No. 406,083
Int. Cl. A61f *5/00*
U.S. Cl. 128—79 11 Claims



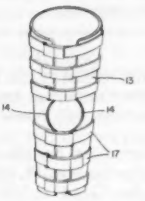
1. In a method for providing a human male adult with the capability of achieving a penile erection, the steps of implanting in the penis of the human male adult in a position extending longitudinally along the penile shaft an elongated flexible hollow tube of stretchable elastomeric material which will assume an elongated substantially straight and substantially rigid condition when supplied at its interior with fluid under pressure and which will assume a shorter more flexible condition when emptied of the fluid under pressure, and simultaneously implanting in the human male at a location where it is accessible for manipulation a flexible container which contains the fluid and which communicates with the tube so that by manipulation the human male can reduce the volume of said container to transfer fluid therefrom into said tube to situate the fluid under pressure in the latter for providing a penile erection.

3,853,123

ORTHOPEDIC KNEE BRACE

Robert R. Moore, 5401 San Leandro St., Oakland, Calif. 94601

Filed Sept. 17, 1973, Ser. No. 398,241
Int. Cl. A61f *3/00*
U.S. Cl. 128—80 C 4 Claims



1. An orthopedic appliance for immobilizing a joint of a human limb, comprising

a semi-rigid resilient support panel adapted to extend above and below the fossa region of the joint and contoured to partially encompass same,

means for altering said contour of said panel to increase the rigidity of said resilient support panel,

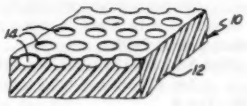
said means for altering said contour of said panel including a plurality of lateral straps spaced longitudinally along said panel, and fastening means for adjustably and releasably securing said straps about the limb, and a sheet of padding material secured within said contour of said resilient support panel and extending laterally therefrom, said sheet of padding material being tapered in the lateral dimention from above the fossa region to below the same.

3,853,124

THERMOPLASTIC SPLINT OR CAST

Lester M. Larson, 4619 Bailey Dr., Wilmington, Del. 19808

Continuation-in-part of Ser. No. 3,474, Jan. 16, 1970, Pat. No. 3,809,600, which is a continuation-in-part of Ser. No. 683,016, Nov. 4, 1967, Pat. No. 3,490,444. This application Nov. 13, 1972, Ser. No. 305,914The portion of the term of this patent subsequent to Jan. 20, 1987, has been disclaimed.
Int. Cl. A61f *5/04*
U.S. Cl. 128—90 6 Claims



1. A process of forming a body supporting member such as a cast, splint or the like, comprising warming a sheet of crystalline thermoplastic polymer having a thickness in the range of about 2 to 200 mils, to a temperature in the range of about 60°C to 110°C for a heat softening period sufficient to convert the total crystalline substance to a softened, amorphous form, said heat-softened sheet of polymer developing a hysteresis to have a setting time substantially delayed to remain soft and amorphous below the crystalline setting temperature, whereby it may be cooled to a comfortable body temperature without immediately setting, cooling said heat-softened plastic sheet to a comfortable body temperature below about 40°C, whereby the sheet may be formed and shaped for use as a body supporting cast or splint, said sheet having at least its surface adjacent to the body member to be protected deformed to include surface irregularities capable of absorbing and interrupting continuous moisture films that may be developed upon the body member to be protected, said surface irregularities consisting of cup-like depressions, knurled depressions, texturing, foam and close spaced perforations which are evenly distrib-

uted throughout the surface of said plastic and the like, cutting said softened sheet to dimensional size and manually shaping, wrapping and forming said sheet upon the body member to be supported and protected at said comfortable body temperature with the surface irregularities disposed adjacent to the body member enclosed, and maintaining the entire supported assembly substantially immobile until the sheet sets by crystallization to a rigid body support.

3,853,125

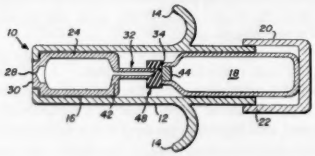
DISPOSABLE NEEDLELESS INJECTOR

Wesley D. Clark, 26870 Taaffee, Los Altos Hills, Calif. 94056, and Keith E. Hollenbeck, 847 Tulane Ct., Mountain View, Calif. 94040

Continuation-in-part of Ser. No. 186,653, Oct. 5, 1971, abandoned. This application Mar. 19, 1973, Ser. No. 342,508

Int. Cl. A61m *5/30*

U.S. Cl. 128—173 H **11 Claims**



1. A needleless hypodermic injector, comprising:

an ampule filled with a liquid medicant to be injected and including, a pressurizing end portion for receiving a charge of pressurizing gas, and a rigid discharge end portion for placing directly into contact with the skin where the injection is to be made which has a substantially uniform diameter bore extending therethrough which is dimensioned for needleless injection;

a container of pressurized gas; and

means for pressurizing said medicant directly with a charge of said pressurizing gas to form a medicant-gas mixture which is expelled through said bore for needleless injection.

3,853,126

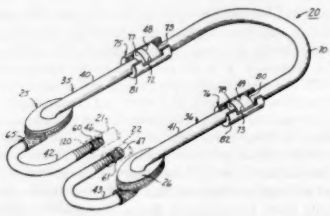
ARTERY-TO-VEIN SHUNT

Rudolf R. Schulte, Goleta, Calif., assignor to Heyer-Schulte Corporation, Goleta, Calif.

Filed Nov. 15, 1973, Ser. No. 416,033

Int. Cl. A61m *5/00, 25/00*

U.S. Cl. 128—214 R **20 Claims**



1. An artery-to-vein shunt for long-term implantation in a human body to give external access to the arterial and venous system, comprising: a first and a second button, each button comprising a body member having a top and a bottom surface, a peripheral wall extending around the body and interconnecting said top and bottom surfaces, a peripheral groove in said peripheral wall, and peripheral button-sealing means in said peripheral groove; a first and a second shunt tube, respectively attached to and passing through the first and second buttons, each of said first and second shunt tubes having an inner and outer wall, and a flow conduit defined by the respective inner wall, each of said shunt tubes forming a coupler portion adjacent to and extending from the top surface of the button, and a connector portion adjacent to and extending from the bottom surface of the body, each said portion having a free end spaced from the button, the free end of the connector portion being intended for long-term attachment to a respective artery or vein; a fixation cuff on the outer wall of each connector portion adjacent to the respective free end; shunt tube stabilizer means extending peripherally around the outer wall of the connector portions of the first and second shunt tubes, adjacent to the bottom surface of the respective button, the fixation cuff and the shunt tube stabilizer means comprising a material with openings into which tissue can penetrate; a third shunt tube having a flow conduit and a pair of free ends; and a pair of couplings, each detachably joined to a respective free end of the third shunt tube to a respective free end of one of the coupler portions so as to interconnect the flow conduits of the first and second shunt tubes through the flow conduit of the third shunt tube when they are joined by the couplings.

3,853,127

ELASTIC SEALING MEMBER

Richard G. Spademan, 933 Addison Ave., Palo Alto, Calif. 94301

Filed Apr. 3, 1973, Ser. No. 347,438

Int. Cl. A61j *1/06;* **B65d** *53/00, 39/00*

U.S. Cl. 128—214.4 **16 Claims**

1. In a method wherein a penetrating instrument is caused to pierce a solid wall of an elastic sealing member and wherein said instrument causes a perforation in said wall, the improvement comprising the steps of:

generating a first force of a first magnitude in said sealing member along a first axis of said member and generating a second force of a second magnitude in said sealing member along a second axis of said member, said second axis being angularly displaced from said first axis, said first and said second forces serving to generate in said sealing member a greater stress along said first axis than along said second axis for closing said perforation caused by said penetrating instrument when said instrument is withdrawn from said member.

3,853,128

VALVED UNDERWATER DRAINAGE APPARATUS

Leonard D. Kurtz, Woodmere, and Robert Bidwell, Melville, L.I., both of N.Y., assignors to Deknated Inc., Queens Village, Long Island, N.Y.

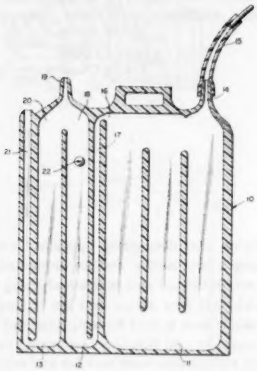
Filed July 10, 1972, Ser. No. 269,962

Int. Cl. A61f *5/44*

U.S. Cl. 128—275 **3 Claims**

1. In an underwater drainage device for draining fluid from a pleural cavity comprising a collection chamber having an inlet, a thoracotomy tube interconnecting the pleural cavity and the inlet to said collection chamber whereby the collection chamber receives and collects fluids drained from the pleural cavity, an outlet from the collection chamber, a U-shaped water seal chamber, a U-shaped manometer chamber, the upper end of one arm of the U-shaped water seal chamber being connected to the outlet from the collection chamber, the upper end of the other arm of the U-shaped water seal

chamber being connected to the upper end of one arm of the U-shaped manometer chamber, the other arm of the U-shaped manometer chamber being open to atmosphere, a connection from said device with a source of suction, during normal operation the source of suction maintaining the pleural cavity at a negative pressure determined by the fluid in the manometer chamber, and valve means in said device, said valve means being normally closed and opening only during sudden abnormal conditions when the pressure within the pleural cavity exceeds atmospheric pressure, said valve means being an



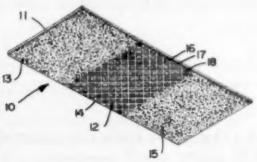
outlet to atmosphere in addition to the outlet to atmosphere provided by the arm of the U-shaped manometer chamber open to atmosphere, said valve means being positioned in said device to vent to atmosphere sudden positive pressure surges within the pleural cavity occurring even during normal operation of the suction source and to prevent said sudden positive pressure surges from causing fluid within the U-shaped manometer chamber from passing out through the arm open to atmosphere to vary the degree of vacuum imposed by the source of suction.

3,853,129

PRESSURE-SENSITIVE TAPE FASTENER FOR DISPOSABLE DIAPERS

Theodore F. Kozak, Peekskill, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Oct. 1, 1973, Ser. No. 402,089
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **6 Claims**



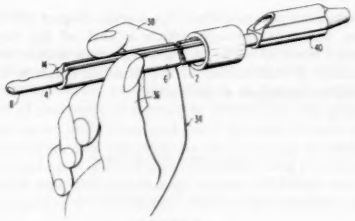
1. In a disposable diaper having a topsheet, a backing sheet and an absorbent core interposed therebetween, the improvement comprising a pressure-sensitive tape fastener having an upper surface and a lower surface, said lower surface being divided widthwise into two end segments at least one of which is adhesively treated, and an adhesively treated middle segment, one of said end segments being a fixed end segment which is secured to said backsheet, the other of said end segments being a releasable end segment, said middle segment being covered on the lower surface of said pressure sensitive fastener with a plastic material having a retiform surface defining a system of hill portions and valley portions, said hill portions covering said adhesively treated lower surface of said middle segment, and said valley portions exposing said adhesively treated lower surface; said fastener when in non-operating position being folded in a manner such that said releasable end segment and said middle segment are superimposed over said fixed end segment with the lower surface of said releasable end segment being in contacting relation and releasably secured to the hill portions of said middle segment.

3,853,130

STERILE HANDLING CATHETER ASSEMBLIES

David S. Sheridan, Hood Rd., Argyle, N.Y. 12809

Filed Dec. 4, 1973, Ser. No. 421,726
Int. Cl. A61m *25/00*
U.S. Cl. 128—349 R **12 Claims**



1. A sterile handling catheter assembly comprising:
a catheter having a distal end portion, a proximal end portion and a central body portion integrally connecting the distal end portion to the proximal end portion,
a protective sheath formed of flexible plastic material that, throughout the length thereof, substantially completely and closely encircles said catheter, the length of said sheath being sufficient that at least the proximal end and central body portions of said catheter are so encircled,
said sheath having a longitudinal slit extending substantially the length thereof,
a first rib running substantially the length of said sheath adjacent one side of said slit extending radially outwardly from said sheath,
a second rib running substantially the length of said sheath adjacent the other side of said slit extending radially outwardly from said sheath substantially the same distance as said first rib,
said ribs creating a pair of parallel barrier members above said slit to preserve the sterility of the edges of the slit during manipulation of said assembly in the installation of said catheter in a patient.

3,853,131

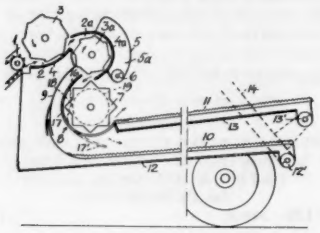
COMBINE HARVESTERS

Sigmund Stokland, 2380 Brumunddal, Norway

Filed Nov. 8, 1972, Ser. No. 304,801
Claims priority, application Austria, Nov. 8, 1971, 9608/71
Int. Cl. A01f *12/18*
U.S. Cl. 130—27 F **6 Claims**

1. A combine harvester comprising a threshing means for receiving cut crop to thresh the same and deliver a stream of threshed material, a first upper straw walker for receiving threshed material from the threshing means, a second lower straw walker disposed below the first straw walker also for receiving threshed material from the threshing means, each of said straw walkers having a respective cooperating shaking table therebeneath for delivering material independently of the other, and separating means disposed between the thresh-

ing means and said first and second straw walkers for receiving the stream of threshed material and directing a portion of said stream of threshed material to said lower straw walker and the remainder of the threshed material to said upper straw walker,



said separator means comprising a grate-shaped baffle means having openings through which a part of the stream of threshed material is fed to the lower straw walker while the remainder of said stream of the threshed material is passed and fed to the upper straw walker.

3,853,132

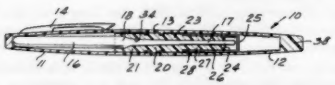
PIPE TOOL

Edward Donald Patton, 611 E. 88th St., Chicago, Ill. 60619

Continuation-in-part of Ser. No. 309,427, Nov. 24, 1972, Pat. No. 3,814,109. This application Mar. 27, 1974, Ser. No. 455,145

Int. Cl. A24f *09/08*

U.S. Cl. 131—243 **10 Claims**



1. A pipe tool comprising: a one-piece member having a scraper portion having a base portion provided on one end thereof and an integral elontated pick extending from the base portion; a body member having a length substantially equal to the length of the elongated pick having a first end portion with a first end surface, a second end portion having means forming a tamping surface, and a passage extending in the body member from the first end surface toward the second end surface; a first removable hollow cap member telescopically received on the first end portion; and a second removable hollow cap member telescopically received on the second end portion of the body member to cover the tamping surface, said one-piece member being removably mounted in the body member with the scraper portion extending from said first end surface and the pick and base portion received in the passage so that the first removable hollow cap member covers the scraper portion and the body member forms a grip while using the scraper portion and so that the one-piece member may be removed from the body portion to provide a pick for use in cleaning a pipe bowl and stem.

3,853,133

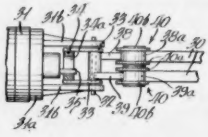
COMBINED HAIR DRYER AND DETANGLER

Ikuo I. Komatsu, Glen Ellyn; Roger A. Rieckman, Elmhurst, and Leon M. Roszyk, Downers Grove, all of Ill., assignors to Sunbeam Corporation, Chicago, Ill.

Filed July 13, 1973, Ser. No. 378,927

Int. Cl. A45d *24/00*

U.S. Cl. 132—11 A **10 Claims**



1. A hair drying and detangling appliance comprising a housing enclosing a first motor and an elongated tangential fan drivingly interconnected and positioned along one wall of said housing with said first motor and fan having their axes aligned, air intake means in said housing adjacent to said fan, air discharge means in said housing comprising an elongated slot substantially coextensive with said fan and interconnected with said fan by a duct within which a heater for heating the air is positioned, support means on opposite sides of said duct for mounting a pair of spaced parallel comb members, a second motor drivingly interconnected to said combs to reciprocate said combs in opposite directions, said combs being positioned to extend lengthwise in front of said slot outside of said housing with support portions extending into said housing adjacent said duct.

3,853,134

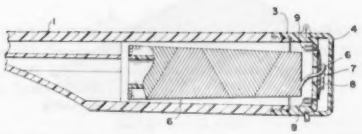
TOOTHBRUSH AND DENTAL-FLOSS DISPENSER

Robert C. McCord, Florence, Mass., assignor to Vistron Corporation, Cleveland, Ohio

Filed Oct. 13, 1972, Ser. No. 297,211

Int. Cl. A61c *15/00*

U.S. Cl. 132—92 A **1 Claim**



1. In a toothbrush comprising a handle equipped at one end with longitudinally spaced rows of tufts of suitable bristles and at the hollow opposite end with a dental-floss dispenser comprising a roll of dental floss mounted inside the handle and a cutter equipped with an open slot to receive the dental floss before it is cut, said cutter being located at the very end of the handle, the improvement comprising a rotatably mounted end cap adapted to surround the cutter, said end cap being

equipped with a hinged cover which can be opened or closed in a locking position to expose or conceal and protect the dental-floss cutter.

3,853,135

UMBRELLA FRAME

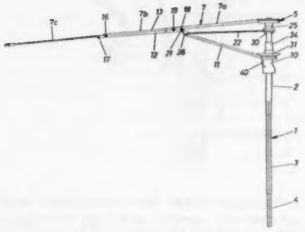
Josef Schafer, Solingen, Germany, assignor to Telesco Brophey Limited, Montreal, Quebec, Canada

Filed Apr. 16, 1973, Ser. No. 351,369

Claims priority, application Germany, Apr. 22, 1972, 2219765

Int. Cl. A45b *19/00*

U.S. Cl. 135—25 R **7 Claims**



1. An umbrella frame comprising a stick, a crown at one end of the stick, a main runner slidable on the stick, dome ribs hinged from the crown; each dome rib including a first section hinged to the crown, a median section hinged to the first section and adapted to fold over the first section, and a third section hinged to the outer end of the median section and adapted to fold over on the median section; a first support member hinged to the stick and extending substantially parallel to the first dome rib section, and a second support member hinged to the first support member and to the third dome rib section and extending substantially parallel to the median section, the outer end of the inner dome rib being hinged at its outer end to the second support member at a point spaced from the hinge of the inner section and the median section, and the hinge point of the first support member and the second support member being spaced from the hinge point of the inner dome rib section and the second support member, and strut means hinged to the main runner at one end and to a geats at the other end adapted to slide on the first support section.

3,853,136

SELF-CENTERING FOLDABLE UMBRELLA STRUCTURE

Julius M. Schwartzenberg, White Plains, N.Y., assignor to Storm Hero Umbrella Co., Inc., New York, N.Y.

Filed Aug. 22, 1973, Ser. No. 390,509

Int. Cl. A45b *19/00*

U.S. Cl. 135—25 R **5 Claims**

1. A foldable umbrella structure comprising a shaft, a handle at one end of said shaft, a notch assembly at the other end of said shaft, a runner mounted on said shaft for movement toward and away from said notch assembly, a plurality of angularly spaced apart linkage means extending radially relative to the axis of said shaft, said linkage means including a pivotal connection to said notch and to said runner, said linkage means being shifted between a collapsed position paralleling said shaft and an extended position spaced from said shaft responsive to said movement of said runner away from and toward said notch, respectively, cover supporting rib means operatively connected to said linkage means, said rib means being shifted between collapsed and extended positions relative to said shaft responsive to movements of said linkage means, said rib means having inner and outer end portions, the inner end portions of said rib means, in said extended position,

being spaced from said shaft, a cover member secured to said rib means and overlying said rib means and said shaft, said cover member having an apex portion in registry with said other end of said shaft, and a cap member including portions extending above and below said cover secured to said apex, said cap member and the portions of said cover located inwardly of said inner ends of said rib means being free of connection with said shaft and linkage means and being movable relative to said other end of said shaft in said extended position.

3,853,137

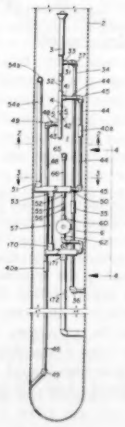
SYSTEM FOR REMOTELY CONSTRUCTING UNDERGROUND STRUCTURES

Charles D. Manson, Jr., and Eugene E. Baker, both of Duncan, Okla., assignors to Holliburton Company, Duncan, Okla.

Filed July 17, 1972, Ser. No. 272,538

Int. Cl. B55g *5/00*

U.S. Cl. 137—1 **37 Claims**



1. A fluid control system for selectively flowing one or more fluids into an area having three distinct and separate zones,

comprising: first delivery means for selectively delivering a heavy fluid to a first, lower zone; second delivery means for selectively delivering a second flow of heavy fluid to a second, upper zone, said second delivery means being fluidly connected to said first delivery means; composite-slurry flow means for selectively delivering a first source of composite slurry to a third, intermediate zone; first valve means for preferentially switching heavy-fluid flow from said first, lower zone to said second, upper zone; composite delivery means for preferentially switching from heavy-fluid flow into said first and second zones to composite slurry flow into said intermediate zone; equalizing means for maintaining equal pressure between said first and said second zones during said composite-slurry flow; second valve means for stopping said composite-slurry flow and for diverting excess composite-slurry flow to said first lower zone; third valve means for flowing composite slurry to said first zone to displace the heavy fluid therein; and, means for closing said third valve means after flowing the desired amount of said composite slurry.

3,853,138

METHOD AND APPARATUS FOR CONVEYING LIQUID THROUGH A LONG CONDUIT

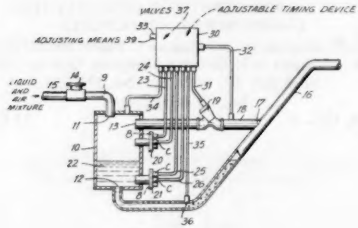
Jan Vilhelm Amren, Sollentuan, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Apr. 25, 1973, Ser. No. 354,337

Claims priority, application Sweden, Apr. 26, 1972, 5530/72

Int. Cl. C02c *1/00*

U.S. Cl. 137—1 **7 Claims**



5. A method for conducting liquid from a collecting receptacle and through a long conduit connected thereto having an upwardly sloping section, supplying a mixture of liquid and air to said collecting receptacle, separating the air from the liquid in the receptacle, passing the separated air through a shunt pipe connecting the upper portion of the receptacle to the upwardly sloping section of the long conduit, collecting the liquid in the receptacle, conveying the liquid through the conduit by closing a valve in the shunt pipe when the liquid has reached a predetermined level in the receptacle, and mixing air into the liquid while said liquid is being conveyed.

3,853,139

Patent Not Issued For This Number

3,853,140

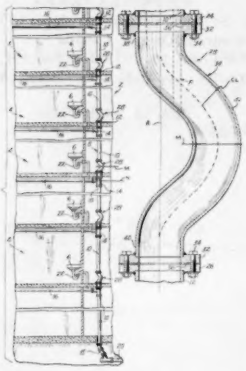
DRAINAGE SYSTEM

John P. Gorman, Woodland, Calif., assignor to Cast Iron Soil Pipe Institute, Washington, D.C.

Continuation of Ser. No. 152,562, June 14, 1971, abandoned. This application Sept. 24, 1973, Ser. No. 399,953

Int. Cl. F16l *5/00*

U.S. Cl. 137—357 **15 Claims**



1. A sanitary drainage system for a multi-floor building, comprising: a substantially vertical sewerage drainage stack extending upwardly within said building, at least one lateral sewerage drainage line connected to said vertical drainage stack, said lateral drainage line being connected to a plumbing fixture through a trap unit for containing a liquid trap seal; and a plurality of fittings installed in said vertical stack and being spaced apart by a distance generally equal to the nominal distance between floor levels of said building, but no greater than 15 feet, the lowermost one of said fittings being within 15 feet of the base of the vertical drainage stack, and said lateral drainage line being associated with the closest one of said fittings, each of said fittings comprising: an upper inlet section connected to said vertical stack and having a single fitting inlet substantially in alignment with the axis of said vertical stack; an intermediate offset section connected to the lower end of said inlet section and offset from said axis, and a lower exit section connecting said offset section to said vertical stack, the lower end of said exit section being in alignment with said axis, each of said fittings having a longitudinal centerline lying in a plane.

3,853,141

TOILET RESERVOIR VALVE

Edward J. Fischer, 630 Queen City, Covington, Ky. 41011

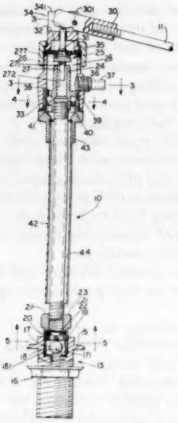
Filed July 9, 1973, Ser. No. 377,756

Int. Cl. F16k *31/26*

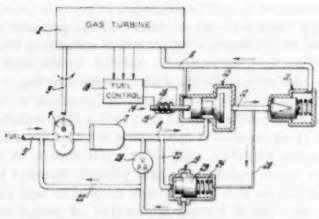
U.S. Cl. 137—436 **10 Claims**

1. In combination with a toilet reservoir tank, a mounting fixture mounted in a bottom panel of the tank, a water supply pipe connected to the mounting fixture, said mounting fixture incorporating an upright socket in the upper portion thereof, there being a passageway in the mounting fixture in communication with the water supply pipe and with the socket, an upper wall for the socket, there being a central port in the upper wall, a ball valve seat in said upright socket surrounding the passageway, a ball valve in the socket to work against said seat, a ball retaining disc overlying the ball valve, slideably received in the socket and engageable with the upper wall of the socket to limit upward movement of said ball, there being a sloping opening in the disc adapted to connect the port with the interior of the socket when the ball is in a raised position to permit passage of water around the ball, a toilet reservoir

valve assembly, and an upright supply pipe supporting the valve assembly, the lower end of the supply pipe communicating with the port so that the upright supply pipe receives water which passes the ball.

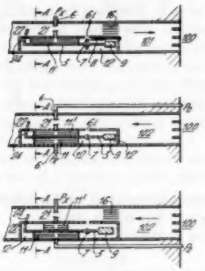


3,853,142
FLOW CONTROL SYSTEM
Richard G. Grundman, Coopersville, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed May 2, 1973, Ser. No. 356,291
Int. Cl. F16k *21/00*
U.S. Cl. 137—487.5 **7 Claims**



1. Means for supplying fuel to an engine comprising, in combination, a source of fuel under pressure; a fuel supply line for the engine; and a balance valve and a flow sense valve connected in series between the source and the supply line; both the said valves being throttling valves including reciprocably mounted valve pistons oppositely biased by fuel pressures on equal areas; the balance valve being biased to open by supply line pressure, to close by pressure between the valves, and to open by means exerting a variable control force on its valve piston; the flow sense valve being biased to open by pressure between the valves, to close by pressure in the supply line, and to close by biasing means exerting a force increasing with displacement of its valve piston.

3,853,143
FLEXIBLE DIAPHRAGM AIR DAMPER
Guido Amandus De Lepeleire, Heverlee, Belgium, assignor to Danfoss A/S, Nordborg, Sweden
Continuation of Ser. No. 220,107, Jan. 24, 1972, abandoned. This application May 24, 1973, Ser. No. 363,323
Claims priority, application Luxembourg, Jan. 29, 1971, 62512
Int. Cl. G05d *7/00*
U.S. Cl. 137—494 **6 Claims**

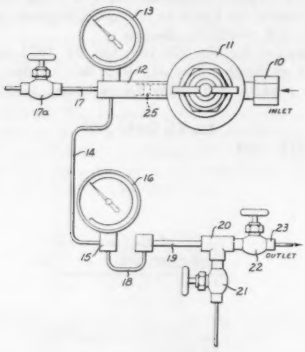


1. A pneumatic control assembly for maintaing a constant downstream pressure in a conduit comprising, a conduit having an air flow control passage section, casing means forming a chamber, said casing means including wall means in common with said control passage section, said wall means having a transversely extending slot, moveable plate member mounted in said chamber, guide means for guiding the movement of said plate member, said plate member having a blade portion extending through said slot for controlling the opening of said control passage section pursuant to the position of said blade member plate portion, bag means sandwiched between said plate and said casing means, said bag means having first portions thereof fixedly secured to said plate member and said casing means and second portions thereof extending between said plate member and said casing, said second portions being characterized by the absence of any significant bending resistance, and aperture means in said casing for admitting and exhausting air to and from said bag means to bias said plate member in one direction, and weight means gravitally biasing said plate member in the opposite direction from said one direction, an opening in said wall means on the downstream side from said slot for providing fluid communication between the downstream side of said control passage section and the interior of said chamber.

3,853,144
FLOWMETER
James M. Whelan, Los Angeles, Calif., assignor to University of Southern California, Los Angeles, Calif.
Filed Mar. 9, 1973, Ser. No. 339,893
Int. Cl. F16k *11/20*
U.S. Cl. 137—608 **2 Claims**

1. In a meter for regulating the flow of a fluid, the combination of:

pressure regulating means for delivering a desired and uniform mass flow of a fluid to an outlet;
a first conduit connected to said outlet;
a pressure gauge connected to said first conduit;
a capillary tubing one end of which is connected to said first conduit;



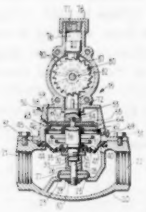
a second conduit connected to the other end of said capillary tubing and having an outlet;
an outlet valve connected to the outlet of the second conduit; and
a flushing valve connected to said second conduit upstream of said outlet valve.

3,853,145

PRESSURE CHANGE ACTUATED SEQUENCING VALVE

Everett W. Judd, Ogden, Utah, assignor to Daniel F. Hammon, Kentfield and Olson LaClead, Unita, both of Calif., a part interest to each

Filed Aug. 7, 1973, Ser. No. 386,467
Int. Cl. A01g *25/02*
U.S. Cl. 137—624.18 **9 Claims**



1. A pressure responsive sequencing valve assembly comprising:
a body member having an inlet, an outlet, a valve seat between said inlet and said outlet, and first and second chambers having a first bore therebetween, said second chamber opening into a second bore generally opposite said first bore;
a valve member for controlling fluid flow through said valve seat, said valve member having a valve disk and a stem with an enlarged head portion; and
damped sequencing means for controlling the actuation of said valve member in response to inlet pressure cycles, said damped sequencing means including:
a flexible, non-rolling diaphragm mounted in said body member in substantially unrestricted fluid communication with said inlet, said diaphragm providing a fluid seal for the end of said first chamber remote from said bore, a piston cup assembly mounted in said first chamber in movable sealing engagement with the walls thereof to define with said diaphragm a sealed enclosure adapted to contain a damping fluid,
a substantially rigid damping plate mounted in said first chamber between said diaphragm and said piston cup assembly, said plate having a central aperture and at least one flow control orifice for controlling the rate of flow of said damping fluid therethrough to prevent operation of said damped sequencing means in response to spurious inlet pressure variations,
spring means coupled between said damping plate and said diaphragm for urging said diaphragm to a normal configuration,
motion translating means coupled to said diaphragm for reciprocal motion therewith and coupled to said valve member, said motion translating means including a first coupling member comprising a body having a hollow interior for slidably receiving the enlarged head portion of said valve stem and a first end wall provided with a bore for slidably receiving said valve stem, said hollow interior and said bore being dimensioned to snugly accommodate the associated valve member portions to provide a lost motion coupling with first major bearing surfaces enabling reciprocation of said motion translating means by a predetermined amount without actuating said valve member,
said motion translating means further including an intermediate coupling member secured at a first end to the other end of said first coupling member body with a central portion of said diaphragm sandwiched therebetween, a central body portion slidably received in said central aperture of said damping plate to provide second major bearing surfaces, and a second end,
said motion translating means further including a cam shaft having a first end secured to said second end of said intermediate coupling member with the central portion of said piston cup assembly sandwiched therebetween, a lower portion slidably received in said first bore to provide third major bearing surfaces, an upper portion slidably received in said second bore to provide fourth major bearing surfaces, and an intermediate portion having a pair of raised facing cam members extending therealong in a direction substantially parallel to the axis of said shaft, one of said facing cam members having a greater dimension in a direction substantially normal to said shaft axis then the other one of said facing cam members; and valve cycle means for controlling the rate of actuation of said valve member, said valve cycle means including a rachet wheel mounted in said second chamber for rotation about an axis substantially normal to said cam shaft axis, said wheel having a plurality of peripheral teeth adapted to be alternately engaged by said cam members upon reciprocation thereof by said diaphragm to rotate said wheel by incremental amounts, said teeth having means for limiting reciprocation of said cam shaft to said predetermined amount to prevent premature actuation of said valve means, and a plurality of escapement channels formed in a face of said wheel engageable only with said other one of said cam members for permitting said reciprocation to exceed said predetermined amount after a predetermined number of said inlet pressure cycles to actuate said valve member, said major bearing surfaces limiting movement of said motion translating means and said valve member to substantially only axial movement.

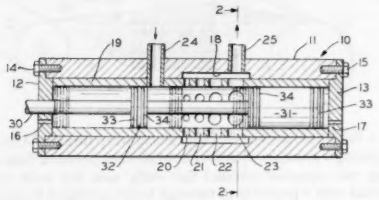
3,853,146
THROTTLE VALVE

William G. Blair, Ormond Beach, Fla., assignor to Blair Engineering, Inc., Ormond Beach, Fla.

Continuation-in-part of Ser. No. 136,721, April 23, 1971, Pat. No. 3,780,531. This application Sept. 12, 1973, Ser. No. 396,606

Int. Cl. F16k *3/24*

U.S. Cl. 137—625.3 **7 Claims**



1. A throttle valve for controlling a pressurized fluid comprising a housing having a bore; a pair of axially spaced spool members slidably mounted within said bore; means for unitarily moving said spool members in said housing and maintaining their spaced relationship; said housing having an inlet line and an outlet line axially spaced from each other and in fluid communication with said bore; means disposed in said housing providing axially spaced apertures of graduated size located in the path of fluid flowing through said valve from said inlet line to said outlet line; said spool members being axially movable to open and closed positions whereby to respectively uncover or cover all of said apertures; one of said spool members having an axial length at least equal to the distance covered by said apertures adapted to progressively cover said apertures and maintain said apertures covered during movement to closed position to control the flow of fluid through said valve and contain the fluid between said spool members; said spools being spaced apart a sufficient distance to cause said inlet line to be disposed between said spools in any position of said spools whereby pressure fluid trapped between said spools exerts equal pressure in both axial directions at all times to stabilize said valve in any position of said spools.

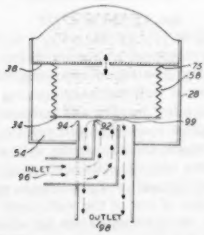
3,853,147
RESPIRATOR FLOW CURVE MODIFIER

Anthony B. Cibulka, Poynette, Wis., assignor to Airco, Inc., New York, N.Y.

Filed Jan. 8, 1973, Ser. No. 321,906

Int. Cl. F16l *55/04*

U.S. Cl. 138—30 **19 Claims**



1. A device for modifying the normal square-pulse characteristic of the flow curve of square-wave respirator systems; to provide a gradual development to peak flow, comprising in combination:

a. a chamber;

b. a movable wall mounted for displacement in said chamber;

c. a gas flow space between said wall and one side of said chamber;

d. an inlet and an outlet to said gas flow space for connection of said device in line with the breathing circuit of said respirator system;

e. a relatively rigid first plate mounted across said chamber and spaced from said movable wall, on the side of said wall non-adjacent to said one side, the space between said plate and wall defining a fluid damping reservoir;

f. bounding means between said inlet and outlet, defining with at least a portion of said movable wall, a variable cross-section gas passageway varying in accordance with the displacement of said portion of said movable wall;

g. an orifice communicating with said fluid damping reservoir;

h. a fluid within the said damping reservoir displaceable through said orifice in response to displacement of said movable wall toward said plate by pressure changes introduced at said flow space by the inspiratory portion of said breathing cycle; the bleeding of said fluid through said orifice allowing controlled growth in cross-section of said gas passageway, thereby providing a damping in build-up of the gas flow through said device; and

i. means to restore the original position of said movable wall upon completion of a gas flow pulse, and to return fluid to said reservoir.

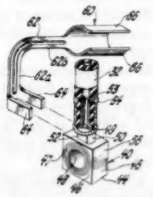
3,853,148
HOSE ASSEMBLY WITH ROUTING BRACKET

Patsy De Vincent, Dayton, and Bruce E. Kirkham, Kettering, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 18, 1973, Ser. No. 361,782

Int. Cl. F16l *11/12*

U.S. Cl. 138—110 **4 Claims**



1. A hose assembly including a hose fitting having a first end including means to be inserted into and crimped to an end of a flexible hose, a second end having at least one orientation mounting surface thereon and an intermediate portion with at least one guide surface means thereon in a predetermined angular relationship to said mounting surface, a flexible hose connected at one end to said first end of said hose fitting and, a rigid pre-bent hose routing bracket having one end aligned by said guide surface means relative to said orientation mounting surface and secured to said hose fitting at said intermediate portion and having its opposite end secured to said flexible hose, said flexible hose being retained bent adjacent to said end of said hose secured to said fitting by said hose routing bracket.

3,853,149

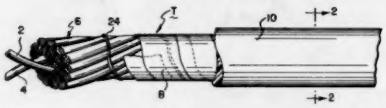
COMPOSITE TUBING

Clifford R. Stine, Bedford Heights, Ohio, assignor to Samuel Moore & Company, Mantua, Ohio

Continuation-in-part of Ser. Nos. 48,774, May 14, 1970, abandoned, and Ser. No. 44,526, June 8, 1970, abandoned. This application June 14, 1972, Ser. No. 262,513

Int. Cl. F16l *11/12*

U.S. Cl. 138—111 23 Claims



1. A composite tubing bundle of indeterminate continuous length of bendable, high strength construction with improved cushion-like, and crush resistant characteristics and controlled low-heat conductance per unit of insulation at service temperatures in excess of 500°F. for maintaining a conveyed fluid sample at constant elevated temperature comprising,

at least one tubular sampling line having an O.D. in the range of one-eighth inches to 2 inches for conveying fluid therethrough,

at least one heat transmitting trace line disposed in heat transfer relation along the length of said sampling line,

a flexible thermal-barrier of high bulk, low density, and self-supporting material disposed in controlled insulating relation with respect to said lines to provide a thermal temperature control gradient to maximize a uniform heat transfer between the lines and to minimize heat transfer to the exterior of the bundle,

said thermal-barrier having an inner layer including a plurality of individual, continuous rope-like elements cabled together in spiraled relation around said lines with a lay at 360° of 2 inches to 20 inches per length of tubing,

said rope-like elements being made from an inorganic, substantially incombustible fibrous material having a density less than 80 pcf. at ambient temperature,

at least one other outer layer disposed in encompassing relation around said inner layer,

said outer layer including a plurality of individual, continuous rope-like elements made from a heating insulating material cabled together around said outer layer and disposed in spiraled relation generally opposite to that of rope-like elements of said inner layer in relation to the longitudinal axis of said bundle,

the thermal-barrier having between two and eight of said layers per inch of wall thickness of the composite bundle with the rope-like elements having a diameter, untensioned, approximately ⅛ inch to 1 inch,

a sheath of extruded polymeric material disposed around said outer layer and having a smaller wall thickness as compared to the thickness of said thermal-barrier and coacting with the thermal-barrier to provide a cushion-like, self-support for the heating and sampling lines,

said tubing bundle, as finished, having an O.D. in the range of ¾ inches to 6 inches,

the ratio of the O.D. of said bundle to the wall thickness of said thermal-barrier being in the range from 2:1 to 4:1 to provide a cushion-like, yet bendable self-support for the heating and sampling lines, and

said thermal-barrier providing a thermal temperature gradient beneath the sheath sufficient to maintain said sheath substantially at its continuous temperature rating for trace line temperatures in excess of 500°F.

3,853,150

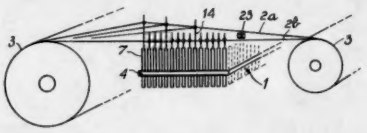
FLUID-OPERATED DEVICE FOR RAISING WARP YARNS IN LOOMS

Enrico Romano, Via Betti 31/a, Milan, Italy 20151

Filed Oct. 3, 1972, Ser. No. 294,735

Int. Cl. D03c *13/00*

U.S. Cl. 139—55 4 Claims



1. A fluid-operated device for raising warp threads in looms, comprising a pressure chamber containing a pressure fluid and having two opposite parallel flat walls, said flat walls being provided with a plurality of through bores arranged in parallel rows, a plurality of fluid-operated cylinders having pistons slidable thereinside and actuated by said pressure fluid, and a plurality of rods each rigid with one of said pistons and extending out of said fluid operated cylinders, said rods being each provided with an eyelet for holding a corresponding warp thread, wherein, according to the improvement, the device further comprises a plurality of rod elements extending between said parallel flat walls and having ends slidable inside said through bores, said rod elements having a longitudinal internal blind hole and a transverse through hole communicating therewith, said longitudinal hole extending between said transverse through hole and one end of said rod elements for communication with a corresponding one of said fluid-operated cylinders, said rod elements being selectively movable between a first position in which said transverse hole is positioned out of said chamber, thereby discharging pressure fluid from said fluid-operated cylinders through said longitudinal hole to the atmosphere and lowering the selected warp threads, and a second position in which said transverse through hole is positioned inside said chamber, thereby providing pressure fluid supply to said fluid-operated cylinders and raising of the selected warp threads, means for selectively actuating said rod elements according to the pattern that has to be reproduced on the fabric and resilient means for returning said rod elements from said second position to said first position.

3,853,151

WEAVING MACHINE

Cornelis Van Donk, Mortel, and Vermeulen, Geert Jan, Deurne, both of Netherlands, assignors to Rüti-te Strake B.V., Deurne, Netherlands

Continuation-in-part of Ser. No. 215,481, Jan. 5, 1972, abandoned. This application Nov. 23, 1973, Ser. No. 418,365

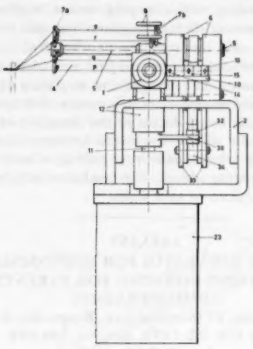
Claims priority, application Netherlands, Jan. 8, 1971, 7100266

Int. Cl. D03d *47/38*

U.S. Cl. 139—122 W 7 Claims

1. In a weaving machine, an apparatus for selectively preparing, storing and presenting to a blowing nozzle any one of a plurality of different weft yarns, comprising a blowing nozzle, a storing device for drawing and temporarily holding an intermediate length of one of the weft yarns, a guiding device having separate means for supporting in a rest position an intermediate portion of each of the weft yarns, which is selectively movable into a plurality of positions in each of which an intermediate portion of one of the weft yarns is presented to the storing device, an auxiliary device for selectively presenting the end of any one of the weft yarns to the blowing nozzle, which has means for receiving the end of each of the weft yarns in a rest position, and which is selectively movable into a plurality of positions in each of which the end of one of the

weft yarns is presented to the blowing nozzle, and mechanism connecting the guiding device to the auxiliary device to cause the auxiliary device to present the end of a weft yarn to the



blowing nozzle when the guiding device is moved into a position to present an intermediate portion of the same yarn to the storing device.

3,853,152

GRIPPER SHUTTLE FOR WEFT THREADS IN A LOOM

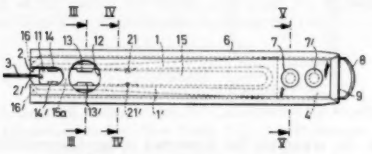
Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed June 27, 1973, Ser. No. 374,239

Claims priority, application Switzerland, July 10, 1972, 10295/72

Int. Cl. D03j *5/06*

U.S. Cl. 139—125 **8 Claims**



1. A gripper shuttle comprising a caselike housing having an opening in a front end thereof; and

a thread clamp mounted in said housing, said clamp having a pair of clamp arms within said housing and a yoke connecting said arms together, said yoke having a continuously smooth outer profile and a front end forming a closure for said opening in said front end of said housing, said front end of said yoke being of a cross-section equal to the size of said opening.

3,853,153

DEVICE FOR INTERMITTENTLY SUPPLYING MEASURED WEFT YARN LENGTHS TO THE WEFT INSERTING DEVICE OF A SHUTTLELESS WEAVING MACHINE

Adrianus Henricus Van Duynhoven, Deurne, and Gerardus Hendrikus Kaalverink, Asten, both of Netherlands, assignors to Rüti-te Strake B.V., Deurne, Netherlands

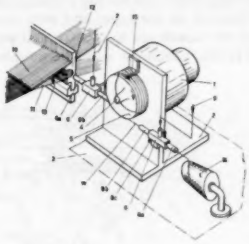
Filed June 28, 1973, Ser. No. 374,376

Claims priority, application Netherlands, June 30, 1972, 720978

Int. Cl. D03d *47/34*

U.S. Cl. 139—127 P **4 Claims**

1. A device for intermittently supplying measured weft yarn lengths from a stationary yarn package in a shuttleless weaving machine, comprising a rotatably mounted measuring roller adapted to receive a plurality of windings of yarn drawn from the yarn package, an electric motor of the quick response type having a driving connection with the measuring roller, a control circuit which is connected to supply current to drive the motor and which is intermittently energized to drive the motor during each weft-insertion period of the weaving machine, a



yarn brake arranged to brake the yarn on the entrance side of the roller, and a continuously energized tensioning injector which is arranged to exert tension on the leading end of the yarn tangentially of the roller, and which in cooperation with the brake maintains the windings of yarn in constant frictional engagement with the roller.

3,853,154

CLIP DEVICE ON A SHUTTLE OF A LOOM

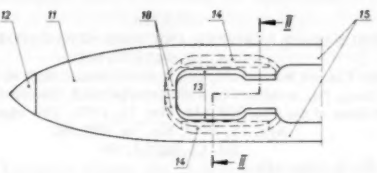
Franz Meier, Rüti/Zurich, Switzerland, assignor to Rüti Machinery Works Ltd., formerly Casper Honegger, Rüti/Zurich, Switzerland

Filed Jan. 22, 1973, Ser. No. 325,138

Claims priority, application Switzerland, Jan. 24, 1972, 969/72

Int. Cl. D03j *5/16*

U.S. Cl. 139—207 **7 Claims**



1. A clamping device on a shuttle for retaining the pirn head of weft pirns, the device having a set of clamping jaws adjacent to lateral walls of the shuttle, said clamping jaws being separate and independent from each other, a resilient supporting material being positioned between each clamping jaw and its adjacent lateral wall for permitting resilient movement of the clamping jaws towards the lateral walls and away therefrom, said resilient supporting material between each clamping jaw and its adjacent lateral wall being secured both to the lateral wall and to the clamping jaw, to support and hold the clamping jaws attached by said resilient supporting material.

3,853,155

TAPE TENSIONING TOOLS

Heinrich Kabel, Quickborn, Germany, assignor to Paul Hellermann GmbH, Pinneberg, Germany

Filed Jan. 4, 1974, Ser. No. 430,608

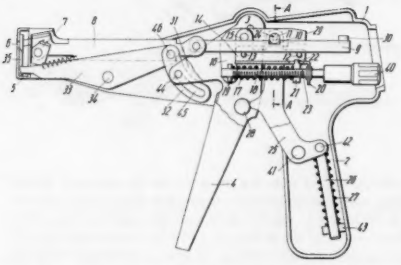
Claims priority, application Germany, Jan. 8, 1973, 2300782

Int. Cl. B21f *9/00*

U.S. Cl. 140—123.6 **4 Claims**

1. A tool for tensioning a tape wrapped around an object and cutting off the surplus when a pre-set tension has been

reached in the tape, said tool comprising a displaceable handlever having a given range of travel, means for gripping and tensioning the tape, cutting means operatively associated with the handlever for being operated when the tape tension exceeds a predetermined value to cut the tape, coupling means between said handlever and the gripping and tensioning means and having an engaged state to cause tensioning of the tape as the handlever is displaced, and having a disengaged state at a predetermined tension in the tape, and stop means to limit displacement of the handlever to a restricted portion of the range of travel of the handlever with the coupling means in



engaged state, said handlever being operatively positioned to actuate the cutting means only when the handlever is beyong the restricted portion of the range of travel after the coupling means is in disengaged state, said coupling means including a pull rod provided with a recess in one longitudinal edge and, a slide moveable in the longitudinal direction of the pull rod and carrying a runner which is guided to be moveable with respect to the slide transversely of the longitudinal direction of the pull rod and immoveable with respect to the slide in the longitudinal direction of the pull rod and which is resiliently urged against that edge of the pull rod provided with the recess.

3,853,156

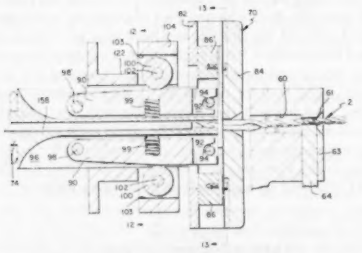
INSULATION STRIPPER AND WIRE SEPARATOR FOR TWISTED WIRE PAIRS

Earl Earnest Folkenroth, and Robert Ullman, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 258,334, May 31, 1972. This application Apr. 11, 1974, Ser. No. 459,982

Int. Cl. B21f *21/00*

U.S. Cl. 140—149 **7 Claims**



1. Apparatus for untwisting the two wires of a twisted wire pair and substantially simultaneously stripping insulation from the end portions of said wires, said apparatus comprising:

first clamping means for clamping said twisted pair thereon against rotation at a location remote from the end of said pair,

second clamping means for clamping said twisted pair thereon at a location adjacent said end of said pair, said second clamping means comprising a pair of opposed cutting blades which are movable relatively towards each other into surrounding relationship to said pair while cutting at least partially through the insulation of each wire of said pair, and

means for rotating said clamping means relative to each other in opposite directions about the axis of a twisted pair held in said clamping means whereby,

upon clamping of said pair in said first and second clamping means with concomitant cutting of the insulation of said wires of said pair by said second clamping means, and upon relative rotation of said clamping means in the direction of the lay of said pair, said pair will be untwisted between said first and second clamping means, and upon pulling of said pair from said second clamping means, the insulation will be stripped from the end portions of said wires.

3,853,157

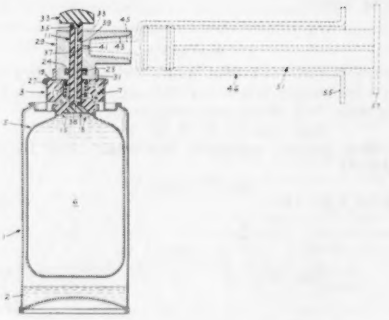
PROCESS AND APPARATUS FOR DISPENSING LIQUID COMPOSITIONS INTENDED FOR PARENTERAL ADMINISTRATION

Anthony J. Madaio, 27 Desmond Ave., Bronxville, N.Y. 10708

Filed Feb. 22, 1973, Ser. No. 334,959

Int. Cl. B65b *3/10*

U.S. Cl. 141—2 **12 Claims**



1. An apparatus for dispensing a liquid composition intended for parenteral administration comprising in combination a rigid container having an opening at one end and adapted to contain under pressure the liquid composition and a gas or liquified gas essentially insoluble in the liquid composition, a closure for the opening having a portion adapted to project into the dispensible liquid composition in the container, a valve within the closure for discharging the liquid composition from the container through the inwardly projecting portion of the closure to an outlet of the container, and a hypodermic syringe comprising a barrel of constant diameter having an opening at one end and terminating at the other end in a hollow filling tip hermetically engaged directly with the outlet of the container to form a fluid-tight conduit for the liquid composition from the outlet to within the barrel of the syringe and a plunger slideably disposed within the barrel and responsive to the pressure exerted by the liquid composition entering the barrel of the syringe.

3,853,158

APPARATUS FOR INSERTING A SYRINGE NEEDLE INTO A VIAL

Albert J. Whitty, Livonia, Mich., assignor to Sinai Hospital of Detroit, Detroit, Mich.

Filed Feb. 5, 1973, Ser. No. 329,501

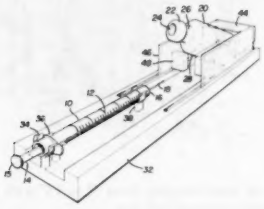
Int. Cl. B65b *3/32*; **B67c** *3/16*

U.S. Cl. 141—27 **5 Claims**

1. Apparatus for assisting persons to insert the needle of a conventional barrel-and-plunger type syringe into the dia-

phragm of a vial such as a multiple dose injection vial, said apparatus for moving the vial toward the needle, which is stationary, until the needle penetrates the diaphragm, comprising:

a lightweight, inexpensive elongated holder having a first portion for positioning a vial and a second portion for releasably retaining a syringe, said syringe and vial being positioned for storage with the vial diaphragm and the syringe needle in an opposed, spaced apart relationship, said second portion of said holder including a plurality of yokes to engage the barrel of the syringe and releasably retain the syringe against vertical, lateral and endwise movement with the needle disposed inwardly parallel to the longitudinal axis of the holder, and



a carrier slidably mounted on the first portion of said holder,

said carrier for holding the vial, with the diaphragm end toward the needle, against endwise movement relative to the carrier and against lateral and vertical movement relative to the holder,

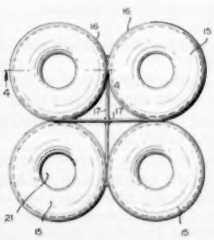
whereby, upon sliding the carrier on the holder toward the needle end of the syringe, the vial in the carrier moves closer to and ultimately against the needle with the diaphragm being punctured thereby, and upon further sliding of the carrier the needle penetrates the diaphragm and is fully inserted therethrough into the vial.

3,853,159

CATSUP TRANSFER FRAME

Allen D. Guerard, Staten Island, N.Y., assignor to the Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed July 13, 1972, Ser. No. 271,280
Int. Cl. B65b *1/04*
U.S. Cl. 141—364 **3 Claims**



1. A device to effect the transfer of catsup from a partially filled bottle to another bottle by means of gravity actuated transfer consisting of:

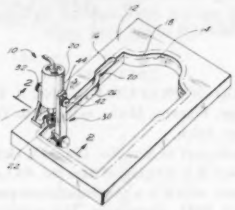
a frame of several joined plastic rings, with each ring binding a flexible plastic coupling collar that is adaptable to serve as a locking frame for holding an inverted catsup bottle firmly above an upright catsup bottle where the necks of both catsup bottles are fastened into the same plastic collar, in which the flexible plastic collar is of a hollow balloon tire shape.

3,853,160

ROUTER

Lawrence Posey, 65 Main Parkway, Plainview, L. I., N.Y. 11803

Filed July 20, 1973, Ser. No. 381,064
Int. Cl. B27c *5/10*
U.S. Cl. 144—137 **4 Claims**



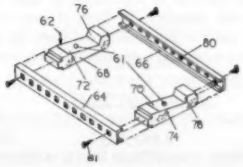
1. A device for cutting a step in the edge of a workpiece having a pair of angularly related surfaces defining said edge, said device comprising a router including a housing and a driven rotary cutting bit having a free cutting end, a support platform operatively connected to said housing and having a guide surface adapted to engage one of the sides of the workpiece in a plane extending generally perpendicularly to the axis of rotation of said bit above the free cutting end of said bit for controlling the cutting depth of said bit into said one side of the workpiece along the axis of rotation, and edge guide means mounted on said housing for maintaining said cutting bit in a predetermined relative position with respect to said edge as the router is moved therealong, said edge guide means including a guide bar having a sharply pointed tip for engaging the other of said pair of workpiece sides along a line extending generally perpendicularly to said other side and below said free cutting end of said bit and having the ability to enter, and engage the surfaces of, a square internal corner in the workpiece, thereby to control the lateral depth of cut of said bit into said one side of the workpiece perpendicularly to the axis of rotation of said bit and to allow the bit to make the deepest possible cut in a square internal corner therein of substantially the same depth from said one side as the depth of the cut along a straight portion of the side.

3,853,161

TRESTLE TEMPLATE FOR POWER TOOLS

John Welgas, 5819 N. 6th, Philadelphia, Pa. 19106

Filed May 15, 1973, Ser. No. 361,122
Int. Cl. B27c *5/10*
U.S. Cl. 144—144.5 **5 Claims**



1. In a template for cutting angular recesses in a work piece having a plurality of sides and suitable for use with a power tool having a work contacting surface, the combination of

A. a pair of spaced base supports,

1. said supports defining a plane, the supports providing a support surface to receive the work contacting surface of the said power tool;

B. at least one cross brace interconnected between the base supports,

1. said cross brace having a first work holding surface which is angularly oriented relative to the plane,
2. said first work holding surface resting upon a work piece side to position the plane of the base supports in angular relation to the said work piece side;

B. said cross brace having a second work holding surface angularly intersecting the said first work holding surface,
1. said second work holding surface intersecting said first work holding surface at an angle of 90°;
2. the said second work holding surface contacting a second said side of the work piece.

3,853,162

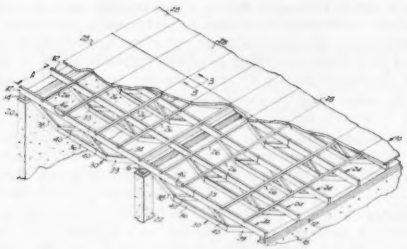
METHOD OF PREFABRICATING A TRUSS

Donald C. Menge, Warren, Mich., assignor to Troy Steel Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 191,347, Oct. 21, 1971, abandoned, which is a division of Ser. No. 853,456, Aug. 27, 1967, abandoned, which is a continuation-in-part of Ser. No. 658,193, Oct. 3, 1967, abandoned. This application Mar. 2, 1973, Ser. No. 337,623

Int. Cl. B27c *9/00*

U.S. Cl. 144—326 R **4 Claims**



1. In the method wherein an upper wooden chord and a lower wooden chord are joined by primary and secondary wooden web members to form a truss, and wherein saw cuts are made to form ends of said members to abut against surfaces of said chords and said members; the improvement which comprises the steps of:

A. cutting a primary web member such that an end thereof is cut at a predetermined reference pitch;

B. cutting a plurality of secondary web members with a first cut at each end thereof such that an end of each said secondary web member is made with a cut at said reference pitch and such that said secondary web members, following said first cuts at each end thereof, have established axes of the same axial length; and

C. making second cuts in a plurality of said ends of said secondary web members to form in each latter end a surface of a pitch which is different from the pitch of said first cut therein, said second cuts passing outside of said axes.

3,853,163

RADIAL TIRES PROVIDED WITH A SIDEWALL STIFFENING CIRCUMFERENTIAL STRUCTURE

Mario Mezzanotte, Milan; Ferdinando Carretta, Monza, and Gianni Turchetti, Bresso, all of Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

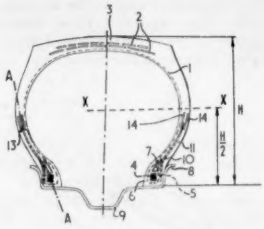
Filed May 29, 1973, Ser. No. 364,335

Claims priority, application Italy, May 31, 1972, 25138/72; Dec. 13, 1972, 8774/72

Int. Cl. B60c *9/02, 15/06*

U.S. Cl. 152—355 **5 Claims**

1. In a pneumatic tire for vehicle wheels having a carcass comprising textile cords which extend substantially radially from one bead to the other and are turned from inside to outside about the cores of the beads and a strip of metal cords disposed in the lower portion of each sidewall of the tire axially outwardly from the bead and the carcass, the improvement wherein the said strip of metal cords extends radially from adjacent the core of the bead substantially on the path of the flexional neutral axis in the lower portion of the sidewall to from about 25 percent to 45 percent of the section height of the tire, the metal cords of the strip being inclined in the



average at an angle ranging from 5° to 15° with respect to the circumferential lines of the tire.

3,853,164

CUSHIONED TREAD TIRE

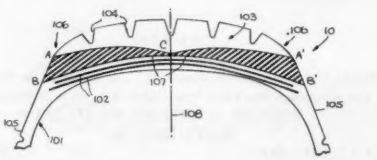
Henri J. Mirtain, Compiegne, France, assignor to Uniroyal S.A., Clairoix, France

Filed May 14, 1973, Ser. No. 359,935

Claims priority, application France, May 18, 1972, 72.17766

Int. Cl. B60c *9/18*

U.S. Cl. 152—361 DM **11 Claims**



1. A pneumatic vehicle tire comprising:

a radial ply carcass;

first and second sidewalls overlying the lateral portions of said carcass;

a tread overlying the crown region of said carcass;

a breaker interposed between said tread and said crown region of said carcass in circumferentially surrounding relation to the latter; and

a cushion constituted by a non-reinforced rubber compound interposed between said breaker and said tread and extending from a point under said tread to the exterior surface of at least one of said sidewalls;

said cushion having a hardness greater than the hardness of said tread, thereby providing for relatively stiff support of the tread shoulder by said at least one of said sidewalls.

3,853,165

TIRE REMOVAL APPARATUS

Wilhelm Collmann, Moislinger Allee 224, 24 Lubeck, Germany

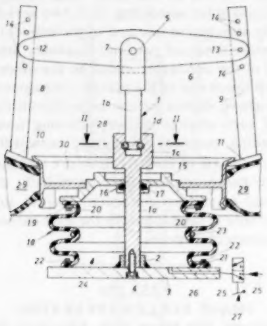
Filed Apr. 10, 1974, Ser. No. 459,662

Int. Cl. B60c *25/08*

U.S. Cl. 157—1.2 **6 Claims**

1. In apparatus for removing tires from circumferentially-separable rims, of the kind in which pressure arms, fitted with

shoes to apply pressure to the tire to press the tire off the rim when the latter is resting on a rim support, are hinged in mutually opposed positions to an upper cross-beam, the invention which comprises an upright central pillar including upper and lower parts and which is arranged on a pedestal plate, the upper part of said pillar being attached to the center of the



cross-beam between said pressure arms and said rim support being mounted on the lower part of said pillar so as to be axially displaceable thereon, and a bellows attached to said rim and said pedestal plate and expandable in a direction to move said rim support toward said shoes by supplying compressed air to said bellows.

3,853,166

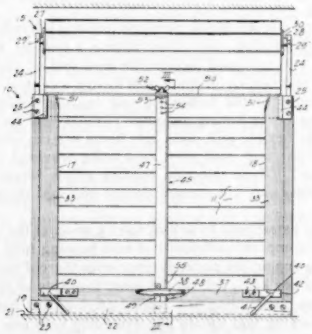
SLATTED SHADE ASSEMBLY HAVING STORM BAR MEANS

Walter A. Wrono, 829 N. South Dr., Hollywood, Fla. 33020

Continuation-in-part of Ser. No. 147,431, May 27, 1971, Pat. No. 3,732,913. This application Jan. 8, 1973, Ser. No. 321,825

Int. Cl. E06b *9/08*

U.S. Cl. 160—133 **25 Claims**



1. In a roll-up shade assembly including a hingedly slatted curtain having one end secured to a roller:

upright bars providing guide tracks within which opposite sides of the curtain are engaged in running relation;

means above the tops of said bars rotatably supporting said roller in operative relation to enable running of the curtain vertically in said guide tracks; and

a replaceable back-up device engaged with said curtain, said back-up device comprising a vertical bar and a horizontal head bar, and means fixedly connecting said horizontal head bar to said track bars and means for detachably securing the upper end of said vertical bar to said head bar.

3,853,167

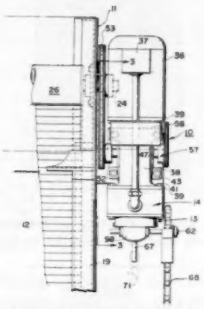
ROLLING DOOR OPERATING MECHANISM

Russel Wardlaw, San Rafael, Calif., assignor to The Cookson Company, San Francisco, Calif.

Filed Aug. 1, 1973, Ser. No. 384,632

Int. Cl. E06b *9/08*

U.S. Cl. 160—133 **7 Claims**



1. In a rolling door operating mechanism for raising and lowering through manual or motor driven means, a rolling door of the type which includes a rotatable axle, a barrel fixed to the axle and a curtain adapted to be rolled onto the barrel, the mechanism comprising an electric motor and having gearbox means operatively coupled to such rotatable axle serving to raise and lower the curtain, manual operator means and including electric clutch means arranged to couple said manual operator means to said motor gearbox means in the manual drive mode when said motor means is operative and to uncouple said manual operator means from said motor gearbox means in the motor drive mode, said manual operator means and electric clutch means including common shaft means, safety brake means arranged about said shaft and operative to halt door travel when said motor is switched to the "off" condition and serving to prevent rotational movement of said shaft means by said motor gearbox means should said electric clutch means fail to uncouple the manual operator means from the motor gearbox means in he motor drive mode.

3,853,168

ROLL-UP SHADE CONSTRUCTION AND METHOD OF ERECTING SAME

Walter A. Wrono, 829 N. Southlake Dr., North Miami Beach, Fla. 33020

Continuation of Ser. No. 218,720, Jan. 18, 1972, abandoned, and a continuation-in-part of Ser. No. 147,431, May 27, 1971, Pat. No. 3,732,913. This application Oct. 4, 1973, Ser. No. 403,410

Int. Cl. E06b *3/48*

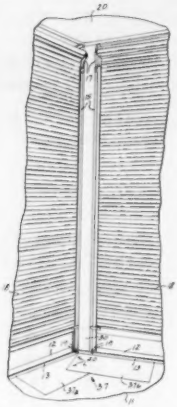
U.S. Cl. 160—133 **39 Claims**

1. A method of erecting a roll-up shade construction along angularly related supporting surface boundary edges joining at an angle, comprising:

making a templet with an edge conforming to said edges and the joining angle of said edges; and

utilizing said templet as a guide, trimming and fitting the

ends of a pair of elongated base plate strips in complementary relation to one another to conform to said angle



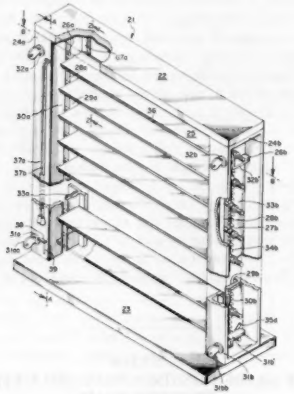
whereby to enable erecting and supporting respective shade units on said strips parallel to said edges.

3,853,169

ROTATABLE TRACK-MOUNTED SHUTTER BLINDS

John D. Music, 738 Shore Rd., Somers Point, N.J. 08244, and Patrick J. Edwards, 11 Park Ave., Mount Vernon, N.Y. 10550

Filed Oct. 29, 1973, Ser. No. 410,426
Int. Cl. E06b *9/30*
U.S. Cl. 160—172 **12 Claims**



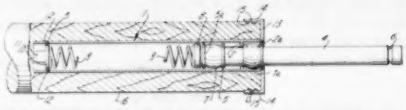
1. A shutter device comprising, in combination: a support structure defining two spaced-apart track structures each track structure defining a forward wall and a rearward wall, the forward and rearward walls being spaced-apart a predetermined slot distance defining a slot therebetween, with the slot defined by one of the track structures being spaced laterally from and opposite to the slot of the other of the track structures, each slot extending substantially uprightly; a plurality of side by side shutter means each about horizontally extending in substantially parallel alignment and in substantially series with one-another, the opposite ends of each shutter means being mounted slidably to and fro within and along the respective opposite slots, each shutter means including extending from each of opposite ends thereof an axis structure extending longitudinally the opposite end axes being about coaxial to one-another, and the shutter means further including an elongated slat structure fixedly mounted to and between the coaxial axes at opposite ends of the slat structure; and connector means interconnecting in series, for each of the opposite ends of each shutter means, side by side axes slidably mounted within a common one of the slots, there being a separate connector means interconnecting each two serially arranged axes pivotably attached at one end of the connector means to one of the interconnected two and pivotably attached at an opposite end of the connector means to the other of the two, such that each lower one of the plurality is suspended from an immediately-above shutter means in juxtaposition therewith, each axis of each shutter means including lever structure fixedly extending transversely radially outwardly from the longitudinal axial axis of the axis structure and the respective axis structure being connected at its radially outward end portion to said connector connected thereto such that the each slat structure is rotatable with the axes thereof by movement of the connector means.

3,853,170

SHADE ROLLER APPARATUS

Bernard Barettella, 688 Maple Ave., Ridgefield, N.J. 07657

Filed Oct. 13, 1971, Ser. No. 188,954
Int. Cl. A47h *1/13*
U.S. Cl. 160—323 **1 Claim**



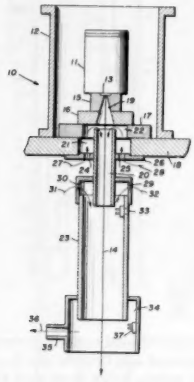
1. In combination with a shade roller having
a hollowed recess at one end:
a shade roller apparatus having a hollowed cylindrical elongated-tube type bearing housing fitted firmly within said recess of said shade roller, said bearing housing having at its inner tube end L-shape locking means preforated from said bearing tube wall, the outer end of said housing having
an integral circular holding cover extending laterally of said bearing housing, said cover having a circular recessed inner wall mounted against the face end of said shade roller and said cover inner wall having a central opening for access to the hollow of said bearing housing, said holding cover having an outer circular wall having extending flexible grip press ears being pre cut sections of said outer wall, said press ears being provided with pre punched V-type injecting holding points whereby said grip press ears are pressed inward into said shade roller end,
a circular extractable twist lock having an outer flat side and of the same circumference of said housing tube hollow, and having on the circumference edge thereof protruding square peg keys, and on the inner face side of said twist lock an outstanding box shaped griping twist handle for interlocking said square peg extending keys into said L-shaped locking channels within the wall of said housing tube,
an extension spring expanding within said tube hollow between the outer flat side of said twist lock and the inner face side of a circular pivot disc, said pivot disc being of sufficient solid thickness and of the same circumference size of said housing tube hollow and being the inner surface of a retractable axle, said axle being retractably mounted within said hollow tube, and retained therein by snap rings and bearing means, whereby the axle may be retracted and extended to mount the shade roller.

3,853,171

APPARATUS FOR PRODUCING WIRE FROM THE MELTS OF STEEL ALLOYS

Bernhard T. Junker, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 28, 1973, Ser. No. 429,330
Int. Cl. B22d 11/12
U.S. Cl. 164—283 S 5 Claims



1. In an apparatus for producing fine diameter wire directly from the melt of an alloy of steel wherein the melt is extruded as a molten metal stream directly into an oxygen-containing gaseous atmosphere where a stabilizing film is formed about the peripheral surface of the stream, and wherein the stabilized molten metal stream descends downwardly through a cooling means where it is solidified to form a solid wire product, the improvement comprising an assembly for effecting said solidification with a cooling medium of gaseous hydrogen, said assembly being comprised of:

a. first and second elongated, vertically disposed and intercommunicating cooling chambers, the upper end of said first cooling chamber being positioned immediately beneath the portion of the apparatus from which the stabilized molten stream issues to provide an entrance for receiving said stream, while the lower end of said first cooling chamber is positioned to extend into the upper end of said second cooling chamber and terminates proximate to the entrance thereof, said second cooling chamber being of greater length and cross-sectional area than said first cooling chamber;

b. means for supplying hydrogen gas into the entrance of said first cooling chamber in co-current flow with said downwardly descending molten metal stream;

c. means for introducing a flow of air into said second cooling chamber proximate to the entrance thereof to form a combustible gas mixture with said hydrogen gas as it exits from said first cooling chamber into said second cooling chamber;

d. means for igniting said combustible gas mixture to cause combustion thereof; and

e. means for exhausting the products of said combustion upon exit from said second cooling chamber.

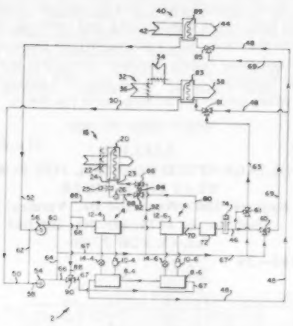
3,853,172

AIR CONDITIONING SYSTEM AND METHOD

Alden Irving McFarlan, 691 Dorian Rd., Westfield, N.J. 07090

Filed Nov. 13, 1972, Ser. No. 305,944
Int. Cl. F24f 3/00
U.S. Cl. 165—22 23 Claims

1. In an air conditioning system having a plurality of zones, the combination of, means to supply a substantially uniform stream of outside air to said system, refrigeration means having a chiller in which one stream of heat-exchange liquid is cooled to provide a stream of chilled liquid and also having condenser means in which a stream of the heat-exchange liquid is heated to provide a stream of heated liquid, air-treating means to pass streams of air which includes said stream of outside air to said zones in heat-exchange relationship with controlled portions of said streams of chilled liquid and heated liquid, means to pass the liquid from said air-treating means to said refrigeration means as return liquid,



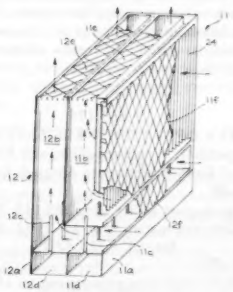
heat-sink means having a liquid flow path along which liquid flows in heat-exchange relationship with a heat absorbing fluid, means to pass along said liquid-fluid flow path a stream of liquid which comprises all or part of said stream of said heated liquid or part of said return liquid or a mixture of the two, and control means which is responsive to the requirements for heating and cooling in said zones and which acts to regulate the portion of said stream of heated liquid flowing along said liquid flow path of said heat-sink means.

3,853,173

INDUCTION TERMINAL UNIT FOR AIR-CONDITIONING SYSTEMS

Gene W. Osheroff, Las Vegas, Nev., assignor to Fluidtech Corporation, Inglewood, Calif.

Division of Ser. No. 158,766, July 1, 1971, Pat. No. 3,799,246.
This application Feb. 20, 1973, Ser. No. 334,132
Int. Cl. G05d 23/00
U.S. Cl. 165—35 8 Claims



1. In an air-conditioning system in which conditioned air under pressure and moving at a relatively high velocity is ducted to each of a plurality of rooms, said system having an induction terminal unit for each of said rooms that comprises: coil and bypass plenums through which a mixture of conditioned and room air alternately flows into the room, said coil

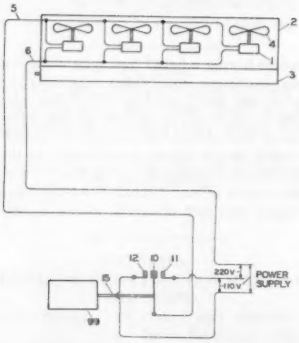
plenum including first and second air inlet means to respectively permit entry of conditioned and room air thereto, room air being induced to enter and flow through said coil plenum only when conditioned air flows therethrough, first air outlet means to permit said mixture of conditioned and room air to discharge directly into the room, and a coil for conditioning air mounted in said second air inlet means to condition room air passing therethrough, said bypass plenum including third and fourth air inlet means to respectively permit entry of conditioned and room air thereto, room air being induced to enter and flow through said bypass plenum only when conditioned air flows therethrough, and second air outlet means to permit said mixture of conditioned and room air to discharge directly into the room, said coil and bypass plenums including additional means to isolate one from the other in such a manner that air flowing in one will not mix with and will not affect air in the other prior to discharge into the room.

3,853,174

DUAL VOLTAGE SPEED CONTROL FOR FORCED AIR HEAT EXCHANGER

Daniel E. Kramer, 2009 Woodland Dr., Yardley, Pa. 19067

Filed Dec. 6, 1971, Ser. No. 205,065
Int. Cl. F28f *27/00*
U.S. Cl. 165—39 **20 Claims**



6. In a forced air heat exchanger including a heat exchange element, said exchanger including input power supply conductor means, a fan positioned to drive air over the element, an alternating current motor connected to the conductor means for driving the fan, which motor operates at high speed when connected to a high voltage supply and low speed when connected to a low voltage supply, the improvement comprising a control and automatic switch means actuated by the control which connects the conductor means alternately to the high and the low voltage power supplies.

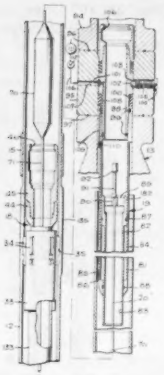
3,853,175

REMOTELY OPERATED WELL SAFETY VALVES

George I. Boyadjieff, Woodland Hills, and Ben A. Otsap, Encino, both of Calif., assignors to Abegg & Reinhold Co., Los Angeles, Calif.

Continuation-in-part of Ser. No. 203,142, Nov. 30, 1971, abandoned. This application May 12, 1972, Ser. No. 252,808
Int. Cl. E21b *43/12*
U.S. Cl. 166—72 **41 Claims**

1. Well safety apparatus comprising an elongated flexible line adapted to extend downwardly into a well to a subsurface zone therein; means for exerting an upward pulling force against an upper portion of said flexible line and thereby moving said line longitudinally upwardly; a safety valve unit adapted to be lowered into the well to said subsurface zone, and adapted to be retained, by upward force exerted through said flexible line, in an open condition permitting upward flow of production fluid through the well; and interengageable connector parts on a lower portion of said flexible line and said valve unit respectively adapted to be operatively inter-



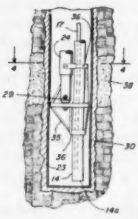
connected by predetermined surface controlled manipulation of the upper portion of said flexible line, in a relation to transmit said upward pulling force from said flexible line to the valve unit and hold it open.

3,853,176

WELL CLEANING APPARATUS

Edward R. Henrich, Mound, Minn., assignor to Bergeson-Caswell, Inc., Minnetonka, Minn.

Filed Mar. 1, 1973, Ser. No. 336,975
Int. Cl. E21b *37/00*
U.S. Cl. 166—223 **7 Claims**



1. Apparatus for cleaning a well and well screen, comprising:

a. an eduction pipe disposed within said well and having an open end positioned along said well screen length;

b. a gas pipe disposed within said eduction pipe and having at least one-half its length immersed beneath the normal liquid surface of said well, and having an open submerged end within the eduction pipe and above the open lower end of the latter;

c. a high pressure fluid pipe disposed within said well and adjacent but outside said eduction pipe, said fluid pipe having a jet nozzle positioned along said well screen length and at an angle to direct a jet stream of fluid against said well screen to dislodge fine particles;

d. drain means connected to said eduction pipe for conveying fluid away from said well;

e. means for conveying a high pressure gas into said gas pipe to cause air-lifting of water and entrained fine particles through the eduction pipe; and

f. means for delivering a high pressure fluid into said fluid pipe.

3,853,177

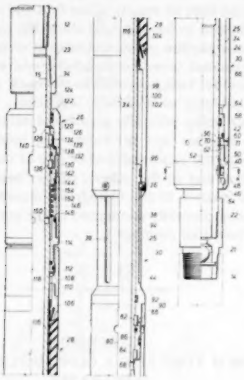
AUTOMATIC SUBSURFACE BLOWOUT PREVENTION

James D. Mott, Houston, Tex., assignor to Michael P. Breston, Houston, Tex.

Continuation of Ser. No. 12,823, Feb. 19, 1970, abandoned. This application Apr. 19, 1973, Ser. No. 352,808

Int. Cl. E21b *23/06, 33/127*

U.S. Cl. 166—244 21 Claims



10. An elongated tool connectable to a string of liquid conducting hollow members for insertion into a well bore, said tool comprising:

a hollow mandrel;

radially expandable sealing means carried by said mandrel, said sealing means defining a first chamber and a liquid filling said chamber;

pressure-responsive control means operatively coupled to said sealing means for normally maintaining said sealing means contracted, and

said control means controlling the pressure of the liquid in said first chamber and including a differential-pressure sensing element responsive to a change in the well bore pressure external to said tool relative to the pressure in said hollow mandrel.

3,853,178

METHOD FOR RECOVERY OF OIL

Chin-Wen Shen, Houston, Tex., assignor to Getty Oil Company, Los Angeles, Calif.

Filed June 6, 1973, Ser. No. 367,571

Int. Cl. E21b *43/24*

U.S. Cl. 166—272 15 Claims

1. A method of recovering oil from a subterranean formation having therein connate water and at least one injection well and at least one producing well, comprising:

providing steam for injecting into said formation;

mixing with said steam to form a mixture therein, small amounts of an alkali metal hydroxide, the concentration of the hydroxide in said steam being less than about 0.5 weight percent after such mixing;

injecting said steam having hydroxide therein into said reservoir at a pressure not substantially greater than formation pressure, through said injection wall;

allowing said hydroxide to react in the presence of steam with said connate water in said formation, to form in situ surface active agents,

said surface active agents being effective to reduce the interfacial tension between the oil and water in said formation, and to facilitate removal of the oil;

continuing the injection of said hydroxide-containing steam for a period of time sufficient to allow for the formation of a substantial amount of surface active agent; and,

producing oil through said producing well.

3,853,179

APPARATUS FOR FORMING WATER GEL

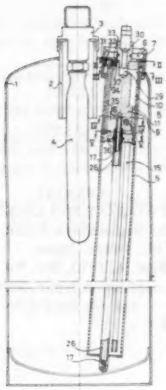
Mats Lindgren, Stockholm, and Hillar Malm, Sundbyberg, both of Sweden, assignors to Incentive Research & Development AB (IRD), Stockholm, Sweden

Filed Aug. 30, 1973, Ser. No. 393,080

Claims priority, application Sweden, Sept. 6, 1972, 11513/72

Int. Cl. A62c *37/06*

U.S. Cl. 169—15 12 Claims



1. Apparatus for forming water gel, especially for fire fighting puprposes, by continuous mixture of water and a liquid gel former, characterized in, that it comprises a mixing chamber provided interiorly with an elongated continuous flow and mixing channel, the upstream end thereof being provided with two inlet ports for water and gel former respectively and along its length is provided at spaced intervals with a number of further inlet ports for water and the downstream end of said channel comprising an outlet for delivery of the ready made water gel, the total length of said channel exceeding the length of said chamber.

3,853,180

OPERATING HEADS FOR FIRE EXTINGUISHERS

Leslie James Harris, Yatley; Eric Trevor Thorpe, Farnborough; John Peter Wellborne, Oxted, and Edward Charles D'Aprix, Camberley, all of England, assignors to Intercontinental Equipment Corporation, Nashville, Tenn.

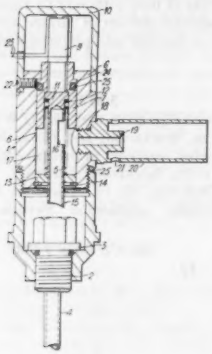
Filed Oct. 12, 1973, Ser. No. 405,876

Int. Cl. A62c *35/02*

U.S. Cl. 169—28 6 Claims

1. In a fire extinguisher of the kind containing an extinguishing medium under pressure, an operating head comprising a housing, a carriage slidably mounted in said housing, a hollow pin movably mounted on said carriage, an electrically operated detonator mounted on said carriage and disposed on detonation to drive said hollow pin through a seal to provide

a flow path for discharge of the extinguishing medium, and manually operable means for selectively sliding said carriage



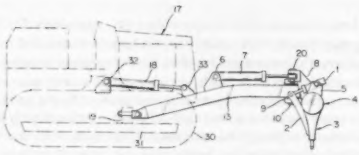
to drive the pin manually through said seal to provide said flow path.

3,853,181

TWO-WAY BULLDOZER

Hirohumi Yoshizaki, Sagamihara, Japan, assignor to Caterpillar Mitsubishi Ltd., Tokyo, Japan

Filed Sept. 4, 1973, Ser. No. 394,123
Claims priority, application Japan, Sept. 8, 1972, 47-89562
Int. Cl. B02f *3/76*
U.S. Cl. 172—805 **4 Claims**



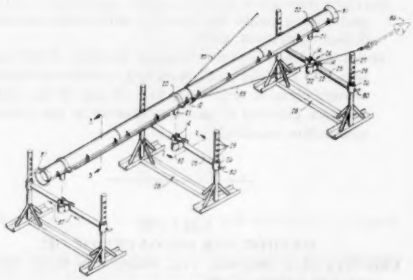
1. A bulldozer having a blade-operating device comprising:
a semi-elliptical frame pivotally connected to and extending from the sides of the bulldozer, and having an upwardly extending portion extending from the bulldozer, and a generally horizontal curved portion extending from the upwardly extending portion;
hydraulic cylinder means interconnecting the upwardly extending portion and the front sides of the bulldozer for raising and lowering the frame;
a cylindrical member disposed adjacent the forward end of the curved portion of the frame;
a first bracket fixed to the central upper face of the cylindrical member;
a hinge pin pivotally connecting the forward end of the curved portion of the frame with the first bracket;
second and third brackets fixed to the cylindrical member on either side of the first bracket;
a first pair of hydraulic cylinders, one end of one cylinder being pivotally connected to the second bracket and the other end being pivotally connected relative to the frame, one end of the other cylinder being pivotally connected to the third bracket and the other end being pivotally connected relative to the frame;
first and second pivot pins rotatably associated with the opposite ends of the cylindrical member respectively;
a rectangular blade rotatably supported relative to the cylindrical member by means of the first and second pivot pins and adapted to be disposed along the opposite ends and the lower portion of the cylindrical member;
first and second bow-like members, one end of each bow-like member being secured to the back side of the blade;
a second pair of hydraulic cylinders, one end of one cylinder being pivotally connected relative to the cylindrical member and the other end being pivotally connected to the extended end of one of the bow-like members, one end of the other cylinder being pivotally connected relative to the cylindrical member and the other end being pivotally connected to the extended end of the other bow-like member.

3,853,182

LAUNCH TUBE FOR A LONG HOLE DRILLING APPARATUS

Henry A. Bourne, Jr., Ponca City, Okla., and Rondon L. Schroeder, Shinnston, W. Va., assignors to Continental Oil Company, Ponca City, Okla.

Filed Nov. 26, 1973, Ser. No. 419,158
Int. Cl. E21b *1/06*
U.S. Cl. 173—33 **5 Claims**



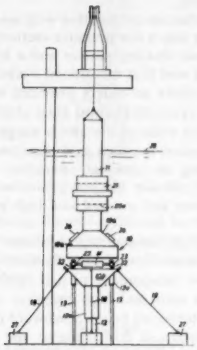
1. A launching apparatus for a horizontal drilling apparatus adapted to bore a hole in a vertical face comprising:
a. a cylindrical tube divided longitudinally and substantially diametrically to form an upper and lower cylindrical half-portion, the inside diameter of which is slightly greater than the maximum diameter of said horizontal drilling apparatus;
b. means for releasably securing said upper cylindrical half-portion to said bottom cylindrical half-portion;
c. vertically and horizontally adjustable mounting means attached to said lower cylindrical half-portion; and
d. means for anchoring said cylindrical tube to said vertical face to support said launching apparatus against axial thrust.

3,853,183

METHODS AND APPARATUS FOR UNDERWATER DRILLING OF OIL AND GAS WELLS

Geoffrey Eke Downs, "Lynwood" Stokesley Rd., Yarm, England

Filed May 8, 1972, Ser. No. 251,195
Claims priority, application Great Britain, May 27, 1971, 17676/71
Int. Cl. E21b 7/12
U.S. Cl. 175—5 1 Claim



1. A method of drilling an underwater oil or gas well comprising the steps of driving a single vertical tubular pile into the water bed, the pile initially extending above the water level from the water bed and being operated on above the water level to drive it into the water bed, the upper portion of the pile being then cut off under water at a selected height above the water bed and removed, securing an apertured guide platform to the top of the remaining portion of the pile under water, which platform has at least one guide aperture therein arranged outwardly of the pile, passing a well conducting casing through said guide aperture and into the bed, drilling the well through the conducting casing, attaching a well head unit to the upper end of the casing just above the platform, permanently attaching an upper portion to the platform to form therewith a chamber below the water surface, which chamber encloses the well head unit, the upper portion having secured thereto an access shaft which extends upwards above the water surface, and pumping the water out of the chamber and access shaft.

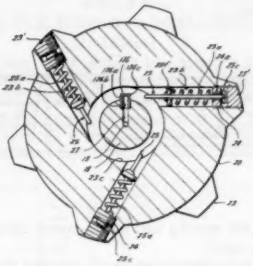
3,853,184

MEANS FOR DETECTING WEAR ON WELL DRILL BITS

Doyle W. McCullough, P.O. Box 484, Westfield, Tex. 77377

Continuation-in-part of Ser. No. 69,549, Sept. 4, 1970, abandoned. This application June 26, 1972, Ser. No. 266,502
Int. Cl. E21b 13/00
U.S. Cl. 175—39 15 Claims

1. Wear detecting means for detecting wear in drill bits used with drilling fluid in rotary well drilling operations comprising:
a. wear means in said bit adjacent bit parts normally worn during drilling operations;
b. a closed fluid pressure system isolated from the drilling fluid pressure in the bit with conduit means in said bit for communicating fluid pressure in said closed system to said wear means;
c. fluid pressure means operably connected to said fluid conduit means for supplying fluid pressure to said wear means;
d. pressure responsive means operably connected to said fluid conduit means;
e. means with said pressure responsive means for restricting flow of the drilling fluid flowing through said bit to increase the line pressure of such drilling fluids;



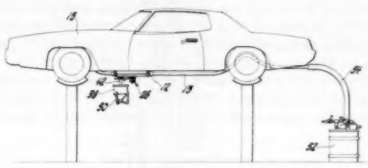
f. means for sensing changes in line pressure of such drilling fluid;
g. means operably connected with said sensing means for signaling changes in said drilling fluid line pressure.

3,853,185

GUIDANCE SYSTEM FOR A HORIZONTAL DRILLING APPARATUS

Herbert Douglas Dahl, and Tibor O. Edmond, both of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Nov. 30, 1973, Ser. No. 420,410
Int. Cl. E21b 47/12
U.S. Cl. 175—45 10 Claims



1. A method for drilling a second elongated horizontal borehole substantially parallel to a first drilled horizontal borehole comprising:
a. inserting a horizontal drill into the ground along an axis parallel to a drilled hole and spaced from said first hole;
b. positioning a signal generating means in said first hole a known distance with respect to said horizontal drill;
c. maintaining said known distance along the axis of said first hole as said second hole is drilled;
d. receiving said generated signal on said drill;
e. calculating the distance of said signal generated from said receiver; and
f. controlling said horizontal drill in accordance with said calculation to maintain a predetermined distance between said drill and said signal generating means.

3,853,186

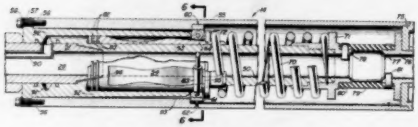
DRILLING ASSEMBLY DEFLECTION APPARATUS

Hilbert D. Dahl, Ponca City, Okla.; Gordon R. Haworth, Glencoe, Ill., and Tibor O. Edmond, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Mar. 12, 1973, Ser. No. 340,639
Int. Cl. E21b 7/04
U.S. Cl. 175—73 19 Claims

1. An apparatus for deflecting the axis of a drill assembly comprising:

a. an outer housing;
b. a piston means having spaced surfaces contoured into the surface of said piston means;
c. means for slidably mounting said piston means;
d. engaging means mounted between said housing and said piston means and in slidable contact with said spaced surfaces;



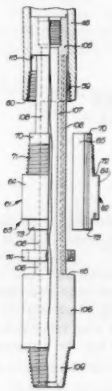
e. means for moving said piston means along the length of its axis; and
f. means for yieldably attaching one end of said housing to said means for slidably mounting said piston means, whereby longitudinal movement of said piston means along its length will communicate the variations in said contoured surfaces to the axial position of said housing with respect to the axis of said piston means.

3,853,187

DUPLEX HYDRAULIC-MECHANICAL JAR TOOL

Wayne N. Sutliff, and Jim L. Downen, both of 2931 Pierce Rd., Bakersville, Calif. 93308

Filed Feb. 7, 1974, Ser. No. 440,500
Int. Cl. E21b *1/10*
U.S. Cl. 175—297 **7 Claims**



1. In a duplex hydraulic-mechanical jar tool, the combination of:
inner and outer telescopically related tubular elements;
means for connecting one of said elements to a drill string; means for connecting the other element to an object to be jarred, referred to herein as a "fish", telescopically overlapping portions of said elements providing an annular chamber for confining an operating liquid;
an annular packer supported on one element and slidably engaging the other element to close one end of said chamber;
an annular floating packer disposed between and slidably engaging both of said elements to close the other end of said chamber;
a relatively short piston extending radially outwardly from said inner element into said chamber;
a relatively short cylinder provided inwardly on said outer element in which cylinder said piston slidably fits to effect a dash pot retarding action on telescopic movement between said elements when said piston and cylinder are in conjunction;
the inner surface of said outer element being relieved in areas immediately above and below the zone of said cylinder, thereby releasing said elements from said dash pot retarding action when said piston and cylinder are out of conjunction;
said cylinder, when in conjunction with said piston, dividing said chamber into a low pressure section, adjacent to and containing said floating packer and a high pressure section adjacent said first mentioned packer;
two pairs of impact shoulders provided on said elements which come respectively into axial abutting engagement when opposite ends of the entire range of relative telescopic movement between said elements are reached,
said tool having an optional operation starting position wherein said cylinder has just passed out of conjunction with said piston and entered said high pressure chamber section; and
annular cam responsive spring resistance means provided on said elements in said low pressure chamber section and operative temporarily to halt further movement of said cylinder into said high pressure chamber section, until a predetermined heavy downward pressure has been applied through said drill string to said spring resistance means to cause the latter to suddenly release and thus produce a snap action downward jar operation,
an upward snap action jar operation being optionally automatically accomplished, starting with the tool in said starting position, by imposing and holding an upward strain of a predetermined value on said drill string.

3,853,188

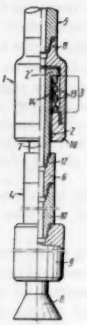
DEVICE FOR BUILDING UP DOWN-PRESSURE ON WELL FACE DURING DRILLING

Jury Sergeevich Vasiliev, Chernomorsky bulvar, 5, korpus 3, kv. 1; Boris Alexandrovich Vasiliev, 5 Taimyrsky pereulok, 2, kv. 1, both of Moscow; Jury Jurievich Nikitin, 1 Pankovsky proezd, 6, kv. 39; Vladimir Alexandrovich Datsenko, Oktyabrsky prospekt, 261, kv. 8, both of Ljubertsy Moskovskoi Oblasti; Vyacheslav Maximovich Popov, Nagornaya ulitsa, 15, korpus 9, kv. 81, Moscow; Jury Dmitrievich Semenov, Bolotnikovskaya ulitsa, 44, korpus 1, kv. 11, Moscow; Valery Askhatovich Kildibekov, ulitsa Dmitria Ulianova, 27/12, korpus 4, kv. 90, Moscow, and Talgat Nazmetdinovich Bikchurin, ulitsa Radischeva, 20, kv. 8, Tatarskaya, all of U.S.S.R.

Continuation of Ser. No. 102,674, Dec. 30, 1970, abandoned. This application Mar. 14, 1973, Ser. No. 341,298
Claims priority, application U.S.S.R., Jan. 7, 1970, 1391730
Int. Cl. E21b *17/00*
U.S. Cl. 175—321 **3 Claims**

1. The combination with a drill string constituted by a plurality of interconnected pipes and a bit operably associated with the lower end of the drill string, of a device located in the drill string for building-up a down pressure on the well face during drilling, said device comprising: a cylinder, a rod provided with a piston located in said cylinder, said piston rod being provided with a through axial bore for the passage of a drilling fluid, and said piston being defined by coaxial alternating outer and inner rings, with each of said inner rings constituting a wedge between the two adjacent outer rings whereby under the influence of a compression pulse, the movable rings enter into contact with one another partially passing and partially dissipating the compression pulse while an extension pulse causes the rings to disengage from one another and define a boundary free surface from which the extension pulse is reflected and returns to the bit, subjecting the bit to a dy-

namic load, the drill string including a pipe adjacent the cylinder, said pipe having an extension, said outer and inner rings being installed movably on the extension, said extension having a lower end entering the axial bore of said rod with a



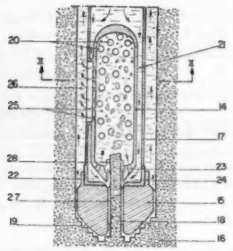
provision for moving therein, said rod having an upper end and an end plate on the upper end of the cylinder, said rings being located between the upper end of said rod and the end plate of said cylinder.

3,853,189

CRUSHING APPARATUS

Abel Cortes, Grenoble, and Elie Gondolios, Le Pecq, both of France, assignors to Compagnie Francaise des Petroles, Paris and Societe Grenobloise d'Etudes et d'applications Hydrauliques, Grenoble, both of, France

Filed June 1, 1972, Ser. No. 258,729
Claims priority, application France, June 2, 1971, 71.21158
Int. Cl. E21b *7/16*
U.S. Cl. 175—404 **4 Claims**



1. A ball crushing apparatus associated with a drilling device including a body and a drilling tool having a central orifice, comprising in combination,

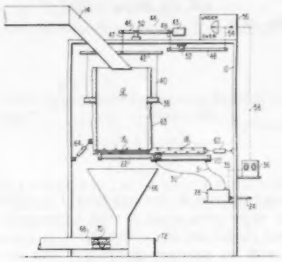
a structure defining a crushing chamber of vertical elongated form having an axis, the crushing chamber containing crushing balls, said chamber being located in the lower portion of the drilling device above the tool, fluid inlet channels for feeding drilling fluid to the apparatus being defined between the device and the chamber therein, the lower extremity of the crushing chamber having a central solids inlet orifice, the orifice in direct communication with the central orifice of the tool, whereby matter to be crushed may be introduced into the crushing chamber, the lower extremity of the crushing chamber further defining conduits converging toward the axis of said chamber causing the fluid inlet channels and the chamber to communicate, the vertical elongated portion of the crushing chamber defining evacuation orifices, evacuation channels defined between the device and the chamber being in communication with the evacuation orifices to permit the evacuation of the chamber, and directing the fluid and the debris of crushed rock thereby evacuated, toward the drilling tool.

3,853,190

APPARATUS FOR WEIGHING DRAUGHTS OF BULK MATERIAL

Mark Delesdernier, 3624 Clifford Dr., Metairie, La. 70002

Filed May 4, 1973, Ser. No. 357,180
Int. Cl. G01g *13/18*
U.S. Cl. 177—105 **4 Claims**



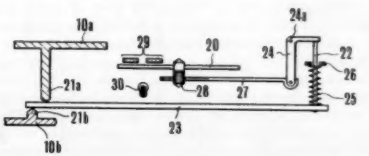
1. An apparatus for weighing successive draughts of particulate material comprising a scale means having a fulcrumed weigh beam counterweighted to balance a predetermined weight of particulate material fed to said scale means, said scale means having a hopper vertically supported from the fulcrumed weigh beam to receive said particulate material, said hopper having an opening in its bottom; a horizontally reciprocating gate adapted to close the bottom of the hopper; a means to horizontally move the gate to open or close the bottom of the hopper; and a horizontally-acting dampening means affixed to a fixed member and hopper having an effective action in a horizontal direction parallel to the direction of reciprocation of the gate to provide dampening of horizontal movement of the hopper caused by the reciprocation of the gate.

3,853,191

WEIGHING MACHINE

Masanori Yamagiwa, Ise, Japan, assignor to Ise Electronics Corporation, Ise City, Mie Prefecture, Japan

Filed Apr. 5, 1973, Ser. No. 348,153
Claims priority, application Japan, Mar. 31, 1972, 47-32483; Mar. 31, 1972, 47-37928
Int. Cl. G01g *3/14*; **G01d** *5/34*
U.S. Cl. 177—210 **9 Claims**



1. A weighing machine with a digital display comprising: a disc means having a rotation in accordance with the descending movement of a weighing platform, said disc means having a first mark pattern generating digital signal corresponding to the amount of said disc rotation and a second mark pattern generating timing signals in relation to said first mark pattern, those marks being shifted in circumferential position relative

to each other; memory means in which said digital signal is not stored therein until said memory means receives said timing signal; said disc means having at least a first group and a second group, each group comprising said first and second marks, said first group representing the first order while said second group representing the second order; and a display means to display figures representing the weight measured in response to the output from said memory means.

3,853,192

POWER DRIVEN SKI

Royce Hill Husted, Wheaton, Ill., assignor to Saroy Engineering, Wheaton, Ill.

Filed Oct. 9, 1973, Ser. No. 404,411
Int. Cl. B62m *27/00*
U.S. Cl. 180—5 R **9 Claims**

1. In a power driven ski for attachment to a skier's foot and for slidingly negotiating snow as with a conventional ski, said power driven ski having in combination;

a. a ski with an aperture dividing it into an anterior ski portion having a longitudinally smooth anterior undersurface and a posterior ski portion,

b. a bridge holding said ski portions to each other,

c. means for attaching said ski to a skier's foot,

d. an endless tread circulateably supported around said posterior ski portion having at least one tension carrying member and a plurality of cleats attached to said tension carrying member for thrusting against the snow,

e. means for circulateably supporting said tread around said posterior ski portion, and

f. motor means coupled to said tread for circulating said tread around said posterior ski portion,

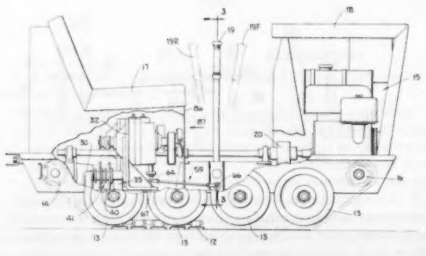
the improvement wherein the posterior ski portion has a longitudinally smooth, snow contacting stationary undersurface and said bridge holds said ski portions in position one relative to the other so that said undersurfaces jointly form a longitudinally smooth skiing undersurface substantially throughout the length of said ski.

3,853,193

VEHICLE DRIVE AND CONTROL SYSTEM

Guy A. Dunn, Martinsville, Ind., assignor to The Mini-Track Tractor Co., Inc., Martinsville, Ind.

Filed May 7, 1973, Ser. No. 358,048
Int. Cl. B62d *11/04*
U.S. Cl. 180—6.48 **10 Claims**



1. A tracked vehicle drive system comprising:

a power input shaft coupled to an engine and receiving energy therefrom;

first and second hydrostatic transmissions on opposite sides of said input shaft, each of said transmissions having an input member and an output member;

pulley and drive belt means in front of said transmissions and coupling said input shaft to said input members to apply power from the engine to said transmissions;

first and second right-angle drive gear boxes, said first gear box being behind said first transmission, and said second gear box being behind said second transmission; each gear box having an input member and an output member; the output members of said hydrostatic transmissions and the input members of said gear boxes being substantially parallel;

first and second vehicle track drive pulleys connected to the output members of said first and second gear boxes, respectively;

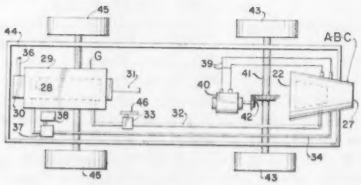
and power transmitting pulley and drive belt means between said transmissions and said gear boxes and drivingly coupling the input members of said first and second gear boxes to the output members of said first and second transmissions, respectively, whereby said first transmission is enabled to drive said first track drive pulley, and said second transmission is enabled to drive said second track drive pulley independent of said first track drive pulley.

3,853,194

DUAL SYSTEM CIRCUIT POWER MEANS

Adolphe C. Peterson, 4623 Bruce Ave., Minneapolis, Minn. 55424

Filed Sept. 11, 1970, Ser. No. 71,580
Int. Cl. B62d *57/00*
U.S. Cl. 180—7 J **6 Claims**



1. In vehicle populsion means: pressurized work fluid generator means having work fluid container space within jacket walls and having means supplying work fluid to the container space and having container outlet; (external heat supply to the work fluid jacket walls by supply and flow of combustion fuel and air flow in combustion duct passage in heat transfer relation through the jacket walls with the work container space;) air fuel supply means for supplying combustible air fuel mixture to burner means in said generator, the combustion products flowing to the work fluid jacket walls from combustion duct passage and being in heat transfer relation through the jacket walls within the wok fluid container space; air-fan duct having rotary air fan therein to induct air and expel air by jet ejection outlet for propulsion effect; primary engine means receiving pressurized and heated work fluid from the work fluid outlet and having work fluid exhaust; the primary engine means (having work transmission by) including electric generator means for electro-magnetic transmission to vehicle road wheel means; the primary engine means having work transmission by rotatable connection with the rotary air fan for propulsion ejection.

3,853,195

POWERED JUMPING STICK

Kaarlo E. Rasanen, 226 S. Isis Ave., Inglewood, Calif. 90301

Filed Jan. 31, 1974, Ser. No. 438,265
Int. Cl. B62d *57/00*
U.S. Cl. 180—8 R **10 Claims**

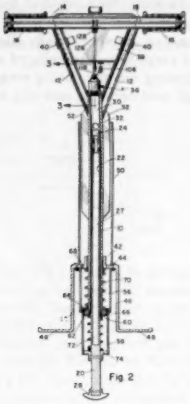


Fig. 2

1. A powered jumping stick, comprising:
an elongated cylindrical body having an upper end with handlebar means mounted thereon;
a leg axially slidable in said body, the leg having a piston on the upper end, and a ground engaging foot on the lower end thereof;
a fuel injection valve unit in the upper end of said body, with means for connection to a source of fuel;
said body having an air inlet and an exhaust outlet spaced below the upper end thereof;
foot rest means axially slidably mounted on said body and being resiliently supported thereon;
a shroud surrounding and concentrically spaced from said body;
and an air pump connected between said body and said foot rest means, with ports opening into said shroud for pumping cooling air through the shroud.

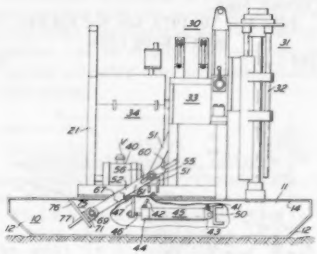
3,853,196

SELF-PROPELLING MECHANISM

George W. Guest, Benton Twp., County of Lackawanna, Pa., assignor to Sprague & Henwood, Incorporated, Scranton, Pa.

Filed May 29, 1974, Ser. No. 474,233
Int. Cl. B62d *57/02*
U.S. Cl. 180—8 C **6 Claims**

1. The combination of a core drilling mechanism mounted on a frame slidably carried on a skid base, means for moving said mechanism along said skid base, and means for moving the skid base along the ground, comprising
a pair of arms pivotedly mounted to said slide frame on opposite sides thereof and of a length to engage the ground,
fulcrum means carried by said arms for selective positioning in active and inactive engagement with respect to said skid base, and
ground engaging means carried by said arms, said fulcrum means when in active engagement being responsive to movement of the slide frame relative to the skid base to cause engagement of the arms with the ground and lift and slidably support the skid base whereby continuance



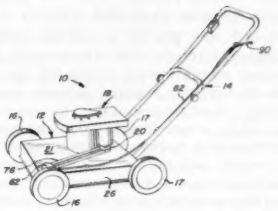
of said relative movement advances the skid base relative to ground.

3,853,197

SELF-PROPELLED VEHICLE DRIVE

Ronald G. Quiram, Michigan City, Ind., assignor to Poloron Products of Indiana, Inc., Michigan City, Ind.

Filed Sept. 15, 1972, Ser. No. 289,254
Int. Cl. B62d *51/04*
U.S. Cl. 180—19 R **15 Claims**



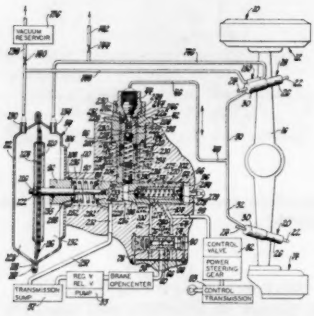
1. A self-propelled vehicle comprising a frame, first means for supporting and transporting said frame, a worm wheel mounted on said first means, said worm wheel being disposed with its plane of rotation generally vertical and being operably connected with said first means to propel said vehicle when said worm wheel is rotated, an elongated worm screw mounted on said frame for engagement with said worm wheel, said worm screw being oriented with its longitudinal axis in said plane of rotation and extending generally vertically, second means adjustably joining said frame and said first means for effecting relative movement therebetween in either direction generally vertically and parallel to said axis of rotation of said worm screw to vary the height of said frame above a surface on which said vehicle is supported by said first means and thereby effecting corresponding relative movement of said worm wheel along said worm screw, said worm screw being of a length and so positioned as to extend adjacent each of the various relative positions assumed by an opposed mating peripheral segment of said worm wheel within the range of such relative adjustment movement therebetween by said second means, drive means supported on said frame for rotating said worm screw, and means for selectively effecting generally horizontal relative movement between said worm screw and said worm wheel into and out of drive mating engagement with one another in each of such relative vertical adjustment positions, for selectively effecting propelling operation of said support and transport means by said drive means in any of such relative vertical adjustment positions of said frame and said first means.

3,853,198

CENTRAL HYDRAULIC SYSTEM

Harold E. Boettger, Pontiac, and Albert R. Tilford, Sterling Heights, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 10, 1973, Ser. No. 358,947
Int. Cl. B60g 17/04
U.S. Cl. 180—41 18 Claims



1. In a central hydraulic system; a sump; source means connected to said sump providing a full flow fluid supply; a first vehicle control actuator means connected to said source to receive, variably restrict and transmit said full flow and provide a variable apply pressure; a second vehicle control actuator means operative to receive, variably restrict and transmit fluid flow and provide a variable apply pressure varying substantially inversely relative to the apply pressure of said first actuator control means during the operation of a vehicle; a vehicle condition changing actuator means operative on receiving a small volume of fluid to provide a normal actuator pressure to actuate the condition changing actuator means and control valve means operatively connected to said first actuator means, said second actuator means and said condition changing actuator means operative to receive full flow from said first actuator means and in one condition supply a low flow to said condition changing actuator means to provide said actuator pressure and a high flow to said second actuator means and in another condition block flow to said condition changing actuator means and connect full flow to said second actuator means.

3,853,199

COLLISION SENSOR FOR FENDER BUMPER OPERATED VEHICLE SAFETY DEVICE

Kenzo Hirashima; Shunji Matsui, both of Yokohama, and Yoshikazu Hayakawa, Yokosuka, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Nov. 30, 1972, Ser. No. 310,943
Claims priority, application Japan, Nov. 30, 1971, 46-111870; Apr. 28, 1972, 47-49731
Int. Cl. B60r 21/00; H01h 3/16
U.S. Cl. 180—91 15 Claims

1. In a motor vehicle having a safety device actuable in response to a collision signal, at least one shock absorbing bumper, which bumper includes an impact receiving member extending crosswise horizontally of the vehicle, a cylinder disposed longitudinally of the vehicle and secured to the vehicle's body, a piston axially slidable in a bore of the cylinder, a piston rod extending externally from the piston and having one end secured to the impact receiving member, the piston rod being adapted to be withdrawn into the cylinder when said impact receiving member deforms upon collision against a solid obstacle, and a resilient member disposed between the impact receiving member and the piston rod to partially absorb an impact resulting from a collision,

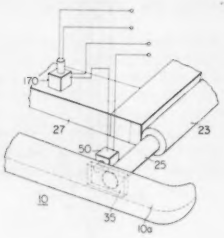
a collision signal producing apparatus comprising, in combination,

a normally closed, vehicle deformation responsive switch forming part of a first electric circuit, said deformation responsive switch including

an insulated housing mounted adjacent said resilient member and disposed on said one end of the piston rod, the housing defining a cavity formed therein,

means defining aligned niches in said one end of said piston rod and said resilient member and lying adjacent said insulated housing,

an elongate actuating member axially slidably mounted in the cavity and extending externally of said housing, said elongated actuating member being arranged to normally extend through said niche in said one end of said piston



rod into said niche formed in said resilient member but to be withdrawn into said housing upon compression of the resilient member resulting from the collision,

a fixed contact disposed in said cavity, and

a movable contact which is associated with said elongate actuating member, disposed in said cavity and normally held in contact with the fixed contact, the movable contact being movable to disengage from the fixed contact in response to the withdrawal movement of said elongate actuating member to open said first electric circuit;

and a normally open, inertia responsive switch forming part of a second electric circuit connected with the safety device for producing the collision signal upon closure thereof, said inertia responsive switch including,

an insulated housing mounted on the vehicle body adjacent to said impact receiving member, the housing defining a cavity therein,

an inertia-responsive magnetic weight located in said cavity for movement in a longitudinal direction of the vehicle body in response to the inertia applied to the body during the collision,

a movable contact disposed on said inertia weight,

a fixed contact disposed in said housing adjacent to the movable contact, the fixed contact being positioned in a path of the inertia responsive movement of said inertia weight,

means applying a force to usually hold said movable contact apart from said fixed contact, the force being overcome by the inertia force at a predetermined degree, and

electromagnetic means mounted in the cavity of said inertia responsive switch housing and situated adjacent to the inertia weight on the side opposite to the position of said fixed contact to exert, upon energization thereof, an attractive force upon said inertia weight to hold the movable contact apart from said fixed contact, said electromagnetic means being connected with the first electric circuit and adapted to be deenergized upon opening of said first electric circuit;

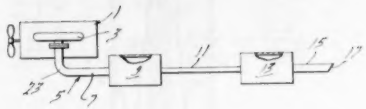
whereby said movable contact of the inertia weight is allowed to engage with the fixed contact at a predetermined degree of collision which is enough to open said vehicle deformation responsive switch, only by overcom-

ing the force of said force applying means to close said second electric circuit.

3,853,200
METHOD OF DETERMINING COMPLIANCE POLES IN EXHAUST SYSTEM

Arnold A. Bergson, Ann Arbor, and Paul A. Johns, Grass Lake, both of Mich., assignors to Tenneco Inc., Racine, Wis.

Continuation-in-part of Ser. No. 340,966, March 14, 1973. This application Apr. 29, 1974, Ser. No. 464,921
Int. Cl. F01n *1/00*
U.S. Cl. 181—35 B **5 Claims**

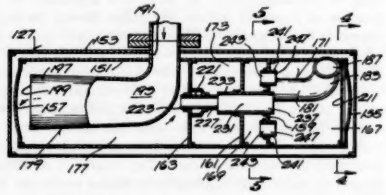


1. A method of testing for the points of high and low compliance in the acoustical pulsations of a heated gas flow system having a predetermined length which comprises attaching a uniform diameter conduit of said predetermined length to the source of said acoustical pulsating hot gas flow to provide a uniform diameter passage for gas to flow the length of the system, determining the linear decrease in temperature from the inlet end of the conduit to the outlet end by measuring the temperatures at the inlet end and the outlet end, determining the actual temperature profile of the conduit by measuring the gas temperature at numerous points along the length of the conduit while gas is flowing through the conduit at a desired rate of flow and pressure, and determining thermal anomalies by comparing the actual temperature profile with the linear decrease in temperature, the points where maximum decreases of temperature as compared with the linear slope occur indicating points of maximum compliance and the points of maximum increase in temperature with respect to the linear profile indicating maximum inertance points.

3,853,201
QUIET SNOWMOBILE

William B. Smale, Cedarbury, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 258,260, May 31, 1972, Pat. No. 3,810,518. This application Mar. 14, 1974, Ser. No. 451,203
Int. Cl. F01n *1/08*
U.S. Cl. 181—53 **3 Claims**

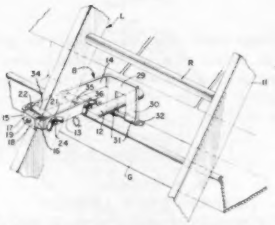


1. A muffler comprising a generally tubular housing having opposed end walls, a first barrier spaced axially from one of said end walls and defining, with said one end wall, an end chamber, a second barrier spaced axially from said first barrier in the direction away from said one end wall and defining, with said first barrier, an outlet chamber, a third barrier spaced axially from said second barrier in the direction away from said one end wall and defining, with said second barrier, a central chamber and defining, with the other of said opposed end walls, a megaphone chamber, a single exhaust megaphone in said megaphone chamber and including an outlet portion terminating adjacent to said other end wall, a first pipe extending from said megaphone chamber to said central chamber, a second pipe extending from said central chamber to said end chamber, a third pipe extending from said end chamber to said exhaust chamber, and an exhaust discharge pipe having a discharge portion extending from said outlet chamber outwardly of said housing.

3,853,202
LADDER SUPPORTING DEVICE

Alfred J. Jarboe, deceased, late of 42 Columbia Ave., Takoma Park, Md. 20012 (by Hilda Jarboe, administratrix)

Filed Feb. 25, 1974, Ser. No. 445,242
Int. Cl. E06c *7/48*
U.S. Cl. 182—108 **6 Claims**

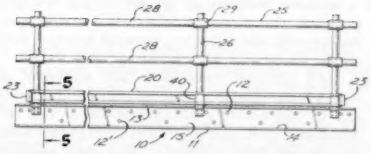


1. A safety device for securing a ladder in leaning position against a vertical surface of the wall of a house or like structure, with the upper end of the ladder reaching above the roof gutter, said device comprising a relatively elongated right-angular bracket having means adjoining one end thereof formed to encompass a side rail of the ladder, means on said bracket for clamping the same to the opposite side faces of said rail, the opposite end of the bracket being disposed in a plane extending substantially at a right angle to the elongated direction of the bracket, said opposite end being bifurcated so as to be capable of straddling one of the spikes normally used for securing the roof gutter to the eave of a roof.

3,853,203
INDEPENDENT TOEBOARD CONSTRUCTION

Richard Lawrence Werner, Sharon; Richard Malvern Montgomery, Transfer, and Martin Peter Ridge, Greenville, all of Pa., assignors to R. D. Werner Co., Inc., Greenville, Pa.

Filed July 23, 1973, Ser. No. 382,047
Int. Cl. E04g *1/26*
U.S. Cl. 182—113 **4 Claims**



1. In an independent toeboard assembly for a stage, the combination of an elongated structural member defining one side edge of the stage; said elongated structural member being a metallic rail comprising a flat vertical web portion and a horizontally projecting flange portion at the upper edge of said web portion; a bracket comprising a horizontal base; said bracket having upwardly projecting, spaced parallel walls defining an upwardly open slot parallel with said structural member; said base being disposed on said flange and having wall portions forming a horizontally opening slot which re-

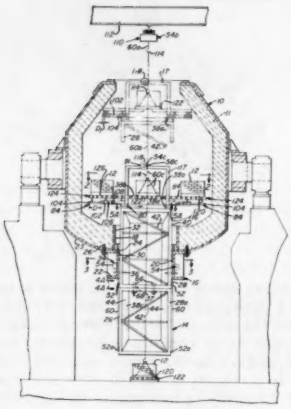
ceives said flange, and a downwardly turned mounting portion; means securing said mounting portion flatwise against said web ; and an elongated toeboard seated edgewise within said slot of said bracket. web;

3,853,204

APPARATUS FOR AND METHODS OF LINING A FURNACE

Joe H. Smith, Bluff Park, Ala., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed May 15, 1972, Ser. No. 253,217
Int. Cl. E04g *3/14*
U.S. Cl. 182—128 **27 Claims**



1. Apparatus for lining a furnace, provided with a bottom aperture in its bottom, with an inner lining of a refractory material, said apparatus having:

a. a support member secured to said furnace in registry with said bottom aperture for guiding said apparatus through said bottom aperture and provided with a tower aperture;

b. a first tower adapted to pass through said tower aperture in said support member and provided with a refractory material aperture;

c. tower elevating means on one of said support member and said first tower and connected to the other of said support member and said first tower and operable to raise said first tower through said tower aperture in said support member;

d. a turntable rotatable on the top of said first tower and provided with a second refractory material aperture in registry with said refractory material aperture in said first tower;

e. a work platform mounted on said turntable, provided with a third refractory material aperture and movable on said turntable from a storage position on said turntable, where said work platform passes through said tower aperture in said support member, to a work position where said work platform extends beyond said turntable to enable a workman to stand on said work platform;

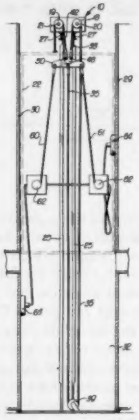
f. refractory material elevating means mounted on said work platform, engageable with said refractory material and operable to raise said refractory material through said refractory material aperture in said first tower, said second refractory material aperture in said turntable and said third refractory material aperture in said work platform into alignment with said work platform so that said refractory material can be transferred to said work platform.

3,853,205

LOAD ACCELERATING AND DECELERATING PULLEY MEANS

Francis H. Gindroz, Jr., Torrance, Calif., assignor to Task Corporation, Anaheim, Calif.

Continuation of Ser. No. 21,660, March 23, 1970,. This application Mar. 16, 1972, Ser. No. 235,448
Int. Cl. B66b *11/06*
U.S. Cl. 187—27 **9 Claims**



1. In a lifting system, the combination comprising

a. a rotary drive having substantially constant output speed,

b. a pulley operatively connected to the drive to be rotated, the pulley having an axis of rotation,

c. load imposing structure to be displaced between spaced rest positions,

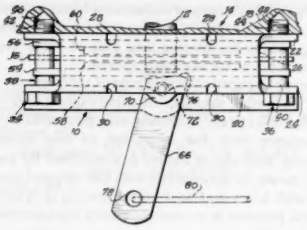
d. a first load transmitting line operatively connected to said structure and also wound about the pulley to an extent corresponding to turning thereof by the drive, there being certain loci of line departure points from the pulley and which have radii from the pulley axis that progressively increase as the pulley rotates in correspondence to increased displacement of the structure from a rest position at a first station, and there being other loci of line departure points from the pulley which have radii from the pulley axis that progressively decrease as the pulley rotates in correspondence to structure approach to rest position at a second station, the pulley having its largest diameter line engaging portion between said certain and other loci of line departure points,

e. there being a second load transmitting line operatively connected to said structure and pulley to unwind from the pulley as the first line winds on the pulley, there being certain loci of second line departure points from the pulley, and which have radii from the pulley axis that progressively increase as the pulley rotates in correspondence to increased displacement of the structure from rest position at the first station, and other loci of second line departure points from the pulley which have radii from the pulley axis that progressively decrease as the pulley rotates in correspondence to structure approach to rest position at the second station, the first and second lines extending generally oppositely from the structure and being in tension so that the lines resist uneven acceleration of the structure, and each of the first and second lines wrapping about the pulley over substantially the same axial length thereof including said largest diameter portion, said lines wrapping in interleaved relation in different grooves defined by the pulley.

3,853,206
SPOT BRAKE STRUCTURE INCLUDING A PIVOTED LEVER ACTUATOR

Robert L. Kibler, and Thomas R. Dosmann, Sr., both of St. Joseph, Mich., assignors to Lambert Brake Corporation, St. Joseph, Mich.

Filed Jan. 2, 1973, Ser. No. 320,528
Int. Cl. F16d *55/224*
U.S. Cl. 188—72.9 **3 Claims**



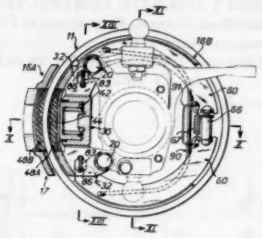
1. A brake structure cooperable with a rotor disc to be controlled comprising an elongated sheet metal channel member of generally U-shaped cross-sectional configuration and including first and second opposite, generally parallel side portions for embracing opposite sides of the rotor disc and a connecting substantially closed bight portion extending between longitudinal outer margins of said side portions for overlying a peripheral section of the rotor disc, said first side portion including a free margin opposite from said bight portion and a generally centrally located opening therethrough between the bight portion and said free margin, stator means movably mounted within said channel member and carrying friction pad means substantially enclosed by said bight portion and said side portions for protection from foreign material, an actuating lever having an inner end portion extending through said opening and engageable with said stator means for energizing the brake upon actuation of the lever, said first side portion comprising an outwardly embossed seat portion providing an inwardly open groove extending transversely of said first side portion, across said opening and with an access opening through said free margin, and an elongated pin bearing element insertable into said groove through the access opening from a position outwardly of said free margin and by force fit through an aperture in the inner end portion of the actuating lever for pivotally connecting the lever with said first side portion with the pin bearing element confined to the groove during movement of the lever.

3,853,207
BRAKE WITH BRAKING MEMBER HAVING A RING, ESPECIALLY FOR AUTOMOBILE VEHICLES

Michel Rist, Boulogne, France, assignor to Societe Anonyme Francaise du Ferodo, Paris, France

Filed Feb. 12, 1973, Ser. No. 331,378
Claims priority, application France, Feb. 16, 1972, 72.05123
Int. Cl. F16d *53/00, 51/22*
U.S. Cl. 188—76 **6 Claims**

1. A brake comprising a fixed support and a member to be braked, said member having a ring, said brake further comprising two braking plates arranged one on each side of said ring and a stirrup engaged on said plates and on said ring, means slidably and pivotally mounting said stirrup on said fixed support, said stirrup containing operating means that act directly on one of said plates and indirectly on the other of said plates through the intermediary of said stirrup, said fixed support being H-shaped and comprising two first legs in the form of a hook for engagement by said plates, said two first legs having shoulders to retain the braking plates, a spring supported against said stirrup to urge said plates into contact against said shoulders, said fixed support having a curved central bar and having two second legs having passages therethrough for the fixed securement of said support, two brake jaws bearing against said fixed support, a second operating

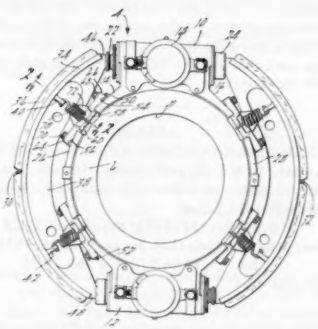


means acting on said jaws to apply them against a braking surface formed on said member to be braked, said fixed support having two slots therethrough, said second operating means comprising a pair of levers passing through said slots and bearing pivotally on the edges of said slots and engaging said brake jaws.

3,853,208
VEHICLE WHEEL BRAKE

Charles W. Nehr, Bloomfield Hills, and George A. Davis, Madison Heights, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed June 1, 1973, Ser. No. 366,305
Int. Cl. F16d *65/08*
U.S. Cl. 188—335 **5 Claims**



1. A vehicle brake assembly adapted to be mounted on a vehicle axle, said brake assembly including a main support member adapted to be secured to said axle about the periphery thereof and extend generally radially therefrom, brake shoe actuating means carried by said member, the improvement comprising at least one brake shoe guide element positioned on the outer periphery of said member and removably secured thereto by fastening means accessible from the inboard side of said assembly, said element being formed with a radially extending outwardly open channel, a brake shoe including brake lining and having a radially extending web portion received in said channel to prevent lateral movement of said brake shoe, and a pair of tension springs positioned on opposite sides of said web portion to interconnect said brake shoe and said element while permitting radial outward movement of said brake shoe in response to forces exerted thereon by said actuator means, whereby said springs, said brake shoe,

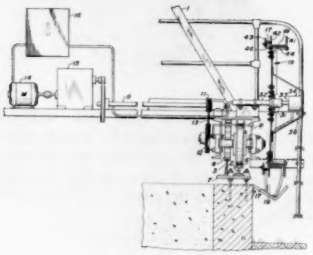
and said element may be removed as a sub-assembly from said brake assembly upon removal of said fastening means.

3,853,209

TRAVELING BRIDGE WITH POWER-CABLE REEL ROTATED IN RESPONSE TO BRIDGE MOVEMENT, SLIPLESSLY AND WITH UNIFORM TENSION

Edwin Marshall Bond, Batavia, Ill., assignor to Chicago Bridge & Iron Company, Aurora, Ill.

Filed Dec. 18, 1970, Ser. No. 99,542
Int. Cl. H02g *11/00*
U.S. Cl. 191—12.2 R **9 Claims**



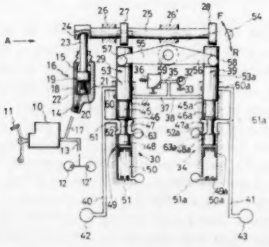
1. An electrically powered traveling-bridge for moving a scraper along a tank of great length including an electric motor and drive means moving with the bridge for driving it along the length of the tank, a reel carried by the bridge for rotation about a generally horizontal axis, a power cable connected to a source of power at one point of the run, and windable on the reel and connected through the reel to the motor, and resting on support means as payed out by the reel, and means for turning the reel to wind the cable; said means by its own correlation to the movement of the bridge tending to provide a speed for the reel which makes the linear speed between the cable and the bridge approximately equal to the speed of the bridge.

3,853,210

TRANSMISSION CONTROL SYSTEM FOR VEHICLES

Shin Kitano, Aichi Gun, and Yutaka Momose, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya Aichi Prefecture, Japan

Filed Oct. 31, 1972, Ser. No. 302,428
Claims priority, application Japan, Nov. 16, 1971, 46-91701
Int. Cl. F16d *67/02;* **F16h** *57/10*
U.S. Cl. 192—4 C **5 Claims**



1. A control apparatus for a vehicle having a transmission with a fluid actuated clutch means and hydraulic brake means, comprising:

a source of fluid pressure;

a fluid conduit connecting said pressure source with said clutch means;

a fluid pressure relief valve disposed within said fluid conduit for automatically controlling said fluid pressure being discharged from said pressure source and for delivering a controlled fluid pressure to said clutch means;

a control valve assembly disposed within said conduit and including a housing provided with a pair of cylindrical bores located parallel to each other and having ports communicating with said conduit, a pair of valve means axially slidably engaged within said bores respectively for controlling said fluid pressure to said clutch means, and spring means for biasing said pair of valve means such that said ports are normally closed;

a shift lever engaged with said pair of valve means for selectively operating said pair of valve means; and

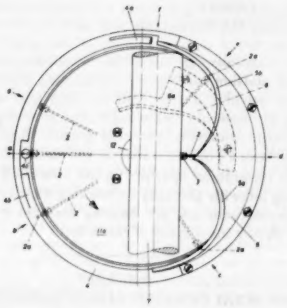
means for selectively operating said pair of valve means in accordance with the operation of said brake means, whereby said clutch means is controlled by said pair of valve means in accordance with the selected operation of said shift lever and said clutch means is returned to its neutral position in accordance with the operation of said brake means.

3,853,211

TYPE LEVER ACTUATION ARRANGEMENT IN SERIAL PRINTERS HAVING ROTATING TYPE LEVER MAGAZINES

Folker Galaske, Pforzheim, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Continuation of Ser. No. 24,156, March 31, 1970, abandoned. This application May 22, 1972, Ser. No. 255,564
Claims priority, application Germany, Apr. 24, 1969, 1920967
Int. Cl. B41j *23/04*
U.S. Cl. 197—18 **5 Claims**



1. A device for printing on a record medium, the combination comprising:

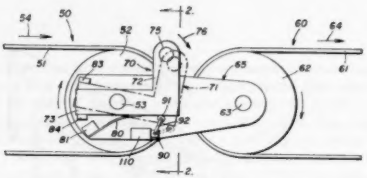
disc-shaped, horizontally disposed, rotary type carrier means having a plurality of type members each formed of a lever having a free end and an extension end arranged in the plane of the type carrier means and pivotally supported thereon and each movable from a stored position to a print position; means for rotating said type carrier means to urge said type members by centrifugal force and gravity into the stored position; means to select a type member from the stored position and to lift said selected type member to a stationary part located above said type carrier means, said means to select acting on said free end of the lever carrying said selected type member, said stationary part having first means for urging the selected type member by centrifugal force and gravity into a horizontal path;

subsequent second means for accelerating said selected type member in the direction of said record medium and for hitting the record medium after a free flight movement with said lever of said selected type member; third means for returning said selected type member to the stored position by centrifugal force and gravity; and fourth means located below said type carrier means and acting on the extension end of said lever of said selected type member in cooperation with said third means to provide a return path for said lever of said selected type member; said second means being shaped to compensate for bending of the lever free end of said selected type member, caused by a Coriolis force.

3,853,212
CONVEYOR BELT TRANSFER MECHANISM

John J. Downes, Chicago, Ill., assignor to Velten and Pulver, Inc., Chicago, Ill.

Filed Aug. 31, 1973, Ser. No. 393,421
Int. Cl. B41j *25/00*
U.S. Cl. 198—27 **10 Claims**



1. A mechanism for transferring objects from a first conveyor having a first conveying reach to a second conveyor spaced from said first conveyor and having a second conveying reach, said mechanism comprising a pair of arms mounted for movement with respect to one of said conveyors and carrying a transfer roller therewith, said roller being movable with said arms between a conveying position thereof wherein said roller is disposed with the upper surface thereof substantially in alignment with said conveying reaches to provide a support surface for objects being transferred between said conveyors and a stop position there wherein said roller is disposed below said conveying reaches, biasing means continually urging said arms and said roller to the conveying position thereof, said biasing means exerting sufficient force on said roller to maintain said roller in the conveying position thereof during the passage thereover of an object, and control mechanism responsive to movement of said arms and said roller to the stop position thereof for stopping one of said conveyors, whereby said roller provides a support surface between said conveyors when said arms and said roller are in the conveying position thereof and said control mechanism stops at least one of said conveyors when said roller and said arms are in the stop position thereof thereby halting product flow along said conveyor automatically in response to movement of said roller and said arms from the conveying position thereof to the stop position thereof.

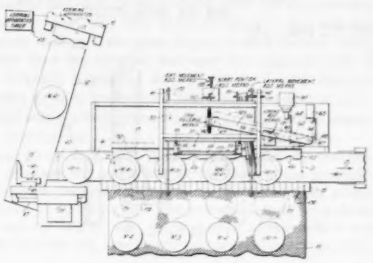
3,853,213
LEHR LOADER

James E. Lehman, and John S. Lush, both of Lancaster, Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio

Filed Mar. 22, 1973, Ser. No. 343,907
Int. Cl. B65g *47/26*
U.S. Cl. 198—31 AB **25 Claims**

1. A lehr loader of the type having a lehr belt, a cross conveyor at an end of the lehr belt and moving transversely thereto, a main carriage mounted for movement in first and second directions parallel to the direction of movement of said lehr belt a second carriage movably mounted on said main carriage, a pusher mounted on said second carriage for transferring articles from said cross conveyor to said lehr belt, and means for driving said main carriage, said driving means comprising:

a lever pivoted at a first end to said loader and means releasably connecting said lever at a second end to said main carriage,



a slot in said lever between said first and second ends,

a crank mounted at one end on a driven shaft, and

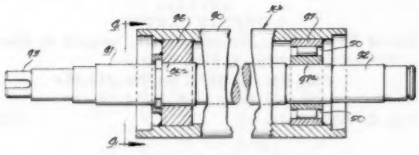
a drive pin mounted on another end of said crank, said drive pin extending into said slot and rotating said lever about its pivoted first end, when said shaft drives said crank, so as to drive said main carriage in said first and second directions,

said releasably connecting means disconnecting said lever from said main carriage in response to a predetermined maximum load applied to said main carriage by said lever.

3,853,214
CONVEYOR ROLLER STRUCTURE

Joseph E. Vinarcsik, Homewood, and John A. Jachim, Chicago, both of Ill., assignors to Hi-Hard Rolls, Inc., Harvey, Ill.

Filed Apr. 23, 1973, Ser. No. 353,292
Int. Cl. B65g *13/04*
U.S. Cl. 198—127 R **5 Claims**



1. A conveyor roller structure comprising: drive shaft means having one end thereof arranged to be journalled and the other end thereof arranged to be driven by drive means, roller sleeve means having end wall portions directed radially inwardly toward said drive shaft means, said end wall portions having apertures formed therein for receiving said drive shaft means, a non-circular rotational-restricting surface means formed on said drive shaft means to be positioned adjacent the axially outwardly located wall surface of one of said end wall portions, said non-circular rotational-restricting surface extending radially outwardly of said drive shaft means, a collar positioned over said drive shaft means to circumscribe said non-circular rotational-restricting surface means, said collar having an internal configuration firmly to engage said non-circular rotational-restricting surface means and a radially inwardly circular flange and means for securing said collar to said one of said wall portions to capture said noncircular rotational-restricting surface between said one end of said end wall portion and said radially inwardly circular flange, whereby relative rotational and axial movement between said drive shaft means and said roller sleeve means is prevented,

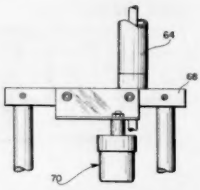
and replacement of said roller sleeve means is accomplished by removing said collar.

3,853,215

BOBBIN LIFTING AND ORIENTING MECHANISM

Manuel S. Paiva, Swansea, Mass., assignor to Leesona Corporation, Warwick, R.I.

Filed Sept. 19, 1973, Ser. No. 398,701
Int. Cl. B65g 47/24
U.S. Cl. 198—236 7 Claims



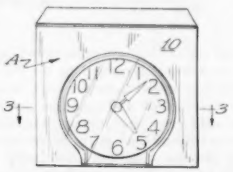
1. An apparatus for lifting and orienting a bobbin having apical and butt ends comprising, bobbin gripping means pivotally mounted and movable from a first bobbin gripping position to a second position, first bobbin guide means and second bobbin guide means positioned intermediate said first bobbin gripping position and said second position and in the path of travel of said bobbin gripping means, one of said guide means being positioned in the path of travel of one of the ends of said bobbin and the other of said guide means being positioned in the path of travel of the other of said ends of said bobbin, each one of said first and second guide means having an aperture of greater width than the diameter of the apical end of said bobbin and of lesser width than the diameter of the butt end of said bobbin to permit passage of the apical end of the bobbin therethrough but to restrict passage of the butt end of said bobbin to thereby pivot said gripping means and said bobbin and, moving means connected to said bobbin gripping means to move said bobbin gripping means between said first bobbin gripping position and said second position.

3,853,216

DISPLAY CARTON

Harold R. Jaeschke, Milwaukee, Wis., assignor to Hoerner Waldorf Corporation, St. Paul, Minn.

Filed Dec. 12, 1972, Ser. No. 314,383
Int. Cl. B65d 5/50, 25/54, 85/40
U.S. Cl. 206—45.14 1 Claim



1. A clock package including:

a clock having a generally rectangular base,

the clock including a body portion extending upwardly and rearwardly from the forward portion of said base and having a dial on the forward side of said base,

a carton enclosing the major portion of the clock,

said carton including a front panel, a bottom panel, a back panel, and a top panel secured in tubular relation,

side walls closing the sides of said carton,

an aperture in the front wall of said carton to accommodate said dial; and extending to the bottom wall of the carton,

a sheet of transparent shrink film secured to the inner surface of said front panel outwardly of said aperture, and secured to the inner surface of said bottom panel,

said bottom panel being narrower in width than said rectangular base of said clock, whereby said base of said clock and said dial of said clock extend through said aperture, said base of said clock resting upon said bottom panel of said carton, and

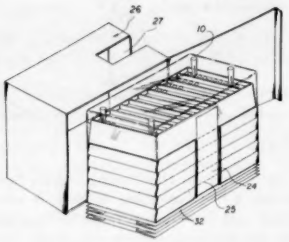
said shrink film overlying said portion of said clock base and said dial projecting through said aperture and shrunk into intimate contact with this portion of the clock to protect the surface thereof.

3,853,217

PIPETTE TIP PACKAGE

Emil A. Scordato, Bronxville, and Jules Barry Cohen, Brooklyn, both of N.Y., assignors to Medical Laboratory Automation, Inc., Mt. Vernon, N.Y.

Filed Aug. 9, 1972, Ser. No. 279,259
Int. Cl. B65d 85/30, 21/00
U.S. Cl. 206—223 9 Claims

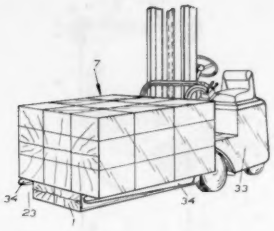


1. A package of pipette tips comprising a first tray having a planar tip supporting surface provided with a plurality of apertures through which pipette tips can project, a first group of tapered pipette tips projecting through the apertures of the tip supporting surface of said first tray, each of said tips having abutment means on the outside periphery of the tip for supporting the tip on the tip supporting surface of said first tray so that the lower part of said tip projects loosely through an aperture thereof, a second tray having a planar tip supporting surface provided with a plurality of apertures through which pipette tips can project, each of said trays being provided with walls depending from the tip supporting surface of the tray a distance at least equal to the length of that portion of a pipette tip projecting through the tip supporting surface of the tray, each of said depending walls being provided with a shoulder below which the wall lies in a substantially vertical plane and above which the wall is inclined inwardly towards the tip supporting surface of the tray, said second tray being supported by the shoulders provided on the walls of said first tray, and a second group of tapered pipette tips projecting through the apertures of the tip supporting surface of said second tray, each of said tips having abutment means on the outside periphery of the tip for supporting the tip on the tip supporting surface of said second tray so that the lower part of said tip projects loosely through an aperture thereof, the position of the abutment means on said second group of pipette tips and the taper and the thickness of the wall of the pipette tips included in said first and said second groups of pipette tips being such that when said second tray of pipette tips is supported on said first tray of pipette tips the pipette tips supported by said second tray nest loosely in the pipette tips supported by said first tray.

3,853,218
LOAD OF GOODS COMPRISING A PLURALITY OF LAYERS, AND A METHOD AND A MACHINE FOR PRODUCING SAID LOAD

Halvor Grasvoll, Goteborg, Sweden, assignor to Gustav Magnusson Gilbert, Vastra Frotunda and Karl Ingvar Weiner, Goteburg, both of, Sweden

Filed Jan. 30, 1973, Ser. No. 328,002
Int. Cl. B65d *75/25*
U.S. Cl. 206—386 **3 Claims**

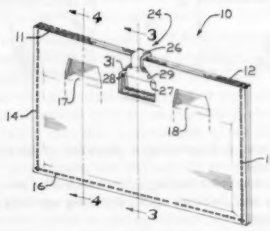


3. An improved load comprising several superimposed layer of goods, a first lowermost portion, a first plastic film enclosing said lowermost portion, a second uppermost portion of goods supported upon said lowermost portion, the side edges of said lowermost portion terminating a considerable distance inwardly from the side edges of said uppermost portion to define two longitudinal spaces at either side of said lowermost portion to accommodate the tines of a fork lift truck, and a second plastic film enclosing said uppermost portion and having at least parts extending along and affixed to the parts of said first plastic film adjacent to said side edges of said lowermost portion for affixing said load portions together.

3,853,219
PACKAGING DEVICE

William A. Castine, Jr., Jeannette, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Apr. 30, 1973, Ser. No. 356,256
Int. Cl. B65d *85/48*
U.S. Cl. 206—448 **15 Claims**



1. A packaging device for a fragile plate-like article which comprises:

a first generally rectangular panel member having a foldable lock-tab member, at least one foldable hold-down flap and a cut-out surrounding said lock-tab member;

a second generally rectangular panel member corresponding substantially in size to said first panel member and having an opening corresponding in location to said lock-tab member;

means fastening said first and second panel members along their side and bottom marginal edges such that the space between the respective panel members defines an envelope-like receptacle for the plate-like article;

said lock-tab member having a generally vertically extending stem portion and two laterally extending side portions so as to define a generally inverted T-shaped configuration;

said cut-out portion having side marginal edges and a top edge, said top edge forming an integral connection with the end of said stem portion of said lock-tab member that is remote from said side portions thereof, the distance between said side marginal edges of said cut-out being smaller than the distance between the opposed ends of said laterally extending side portions of said lock-tab member so as to enable said side marginal edges to overlap said side portions when the packaging device is assembled and locked;

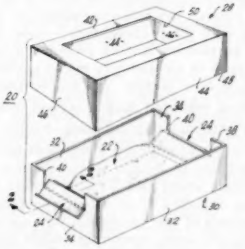
said hold-down flap being defined by a generally horizontally disposed slit and a pair of slits depending generally downwardly therefrom, such that when a plate-like article is placed in said envelope-like receptacle said hold-down flap can be folded over the top edge of the article and down between the article and said second panel member; and

said opening being sufficiently large such that when an article is placed in said envelope-like receptacle, said lock-tab member can be pushed through said opening and folded through a complete turn of 360°, whereafter said side portions of said lock-tab member can be inserted under said side marginal edges of said cut-out, and thus between said first and second panel members so as to lock the article within the packaging device.

3,853,220
HAMMOCK PACKAGE

Howard L. Luray, 948 Birmingham Rd., Burbank, Calif. 91504

Filed Feb. 22, 1972, Ser. No. 228,011
Int. Cl. B65d *85/30*
U.S. Cl. 206—466 **6 Claims**



1. A package comprising:

a flexible but substantially non-elastic hammock member adapted to enclose a product to be packaged, said hammock member being of a size to extend beyond both ends of said product;

angularly shaped support means each having an inner leg adapted to be attached to an end of said hammock member, and an outer leg at an angle thereto; and

an external structure surrounding said hammock and said support means and supporting the same, said structure engaging said outer legs of said support means to rotate the same to a position to tension said hammock member between them.

3,853,221

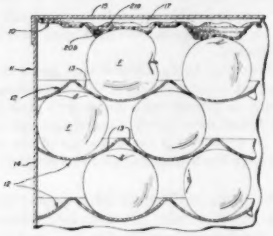
PAD FOR CUSHION PACKING FRAGILE ARTILCES

James W. Boyd, Crown Point, Ind., assignor to Packaging Corporation of America, Evanston, Ill.

Continuation-in-part of Ser. No. 125,186, March 17, 1971, abandoned. This application Apr. 12, 1973, Ser. No. 350,649

Int. Cl. B65d *25/12*, *81/16*, *85/34*

U.S. Cl. 206—521 11 Claims



1. A pad of soft, resiliently compressible material for use in cushion packing fragile articles disposed within a container wherein the articles form a top layer within the container and are arranged in laterally spaced relation; said pad being positionable within the container and interposed the top layer of articles and a closure for the container, the peripheral shape of said pad approximating the area delimited by the container side walls, said pad comprising a plurality of laterally spaced, hollow projections depending a like amount from a predetermined plane of the pad and resiliently engaging each of the articles forming the top layer, each projection including a base portion having the undersurface thereof adapted to engage an article disposed therebeneath and forming the top layer, and an inwardly tapered wall interconnecting the periphery of the base portion with the predetermined plane of the pad, said wall having an exterior surface provided with a first line of flexure arranged in substantially encompassing relation with respect to said base portion and spaced therefrom, and an interior surface provided with a second line of flexure arranged in substantially encompassing relation with respect to said base portion and spaced a different amount therefrom than said first line of flexure whereby controlled flexure of said wall occurs about said lines of flexure upon said base portion being distorted by an article engaging said base portion; the portions of said projection wall ajacent said lines of flexure being resiliently compressed when controlled flexure of the projection wall occurs.

3,853,222

PRESSURIZATION APPARATUS

John D. Helms, Dallas, Tex., assignor to Matchpoint Industries, Inc., Dallas, Tex.

Filed June 21, 1973, Ser. No. 372,332

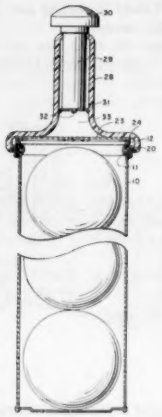
Int. Cl. B65d *85/16*

U.S. Cl. 206—315 8 Claims

1. Apparatus for enclosing and sealing the open end of a cylindrical container having an outwardly radially extending flange near the open end comprising

a. collar means adapted to surround the outer surface of said container and having an internal dimension less than the external dimension of said flange,

b. cap means adapted to removeably mate with said collar



means and form a seal with the top surface of said flange, and

c. means for injecting gas through said cap means into the interior of said container.

3,853,223

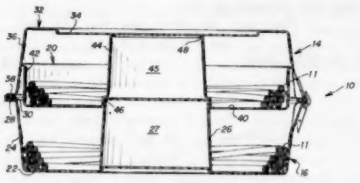
ROPE CONTAINER

F. Caroline Nowlain, 4314 Thunder Rd., Dallas, Tex. 75234

Filed June 14, 1973, Ser. No. 370,008

Int. Cl. B65d *85/04*; B65h *75/02*

U.S. Cl. 206—403 11 Claims



1. A container for carrying a plurality of lengths of rope which comprises:

a bottom pan section having a bottom wall, first upstanding side walls and a center wall extending upwardly from said bottom wall;

a top section having a top wall and downwardly extending second side walls of a size to mate with said first walls;

fastener means for removably coupling said pan and top sections to form a sealed volume; and

a tray mounted in said sealed volume, said tray having a bottom wall, a side wall of a size to fit with clearance inside said top section, seating structure on said tray for mating with the top of said center wall releasably supporting said tray in position above said bottom wall, and a center wall on said tray of a length to contact said top wall to hold said tray in position and transfer stacking forces from said top wall through said center walls to said bottom wall.

3,853,224

INFORMATION RETRIEVAL SYSTEM

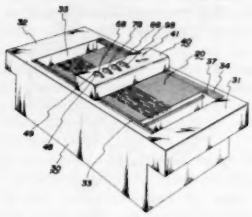
Masaru Furuoka; Hisao Ohki; Koichi Tominaga; Tuguhiro Hara, and Tetsuya Ikeda, all of Tokyo, Japan, assignors to Gakken Co., Ltd., Tokyo, Japan

Filed July 18, 1973, Ser. No. 380,286

Claims priority, application Japan, Aug. 19, 1972, 47-83225; Sept. 25, 1972, 47-95094; Sept. 16, 1972, 47-107817

Int. Cl. B07c *3/20*

U.S. Cl. 209—80.5 15 Claims



1. An information retrieval system comprising, in combination:

a number of sheetlike objects each having indentations and non-indentations formed on one edge thereof in accordance with one of a set of code characters assigned thereto, each of said code characters consisting of a particular arrangement of code elements not more than half of which correspond to the binary digit 1 while the other code elements correspond to the binary digit 0, each of said code elements which correspond to the binary digit 1 being represented by each of said indentations of prescribed unit width, and each of said other code elements which correspond to the binary digit 0 being represented by each of said non-indentations of the prescribed unit width;

an open-top enclosure for accommodating said sheetlike objects in such a manner that said sheetlike objects are disposed vertically each with said one edge thereof directed upwardly;

selector means mounted on the open top of said enclosure for linear motion transversely of said sheetlike objects accomodated therein, said selector means comprising:

probing means including a plurality of probing elements arranged in register respectively with said indentations and non-indentations formed on said one edge of each of said sheetlike objects, said probing elements being individually movable between an upper and lower position and being normally held in said upper position, and

actuating means for selectively moving said probing elements to said lower position in accordance with the code character assigned to a desired one of said sheetlike objects, said actuating means comprising a plurality of disks rotatably supported above said probing elements respectively, each of said disks having a plurality of circumferentially spaced radial projections thereon, and means for manually turning said disks for selectively moving said probing elements to said lower position by said radial projections formed on said disks; and

means for causing said sheetlike objects to tend to move upwardly against the selected probing elements in said lower position in relation with the linear motion of said selector means, whereby only the desired sheetlike object is raised from among the other sheetlike objects as said selected probing elements are all received in the indentations of the desired sheetlike object.

3,853,225

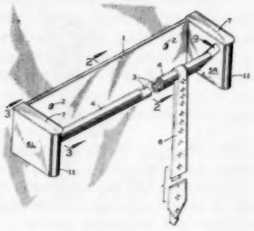
NECKTIE HOLDER

Gustav Gegauff, 5502 Washington St., Apt. 210, Gables, Fla. 33021

Filed Sept. 17, 1973, Ser. No. 397,845

Int. Cl. A47b *97/00*

U.S. Cl. 211—89 5 Claims



1. A necktie holding rack comprising an elongated rectangular panel of uniform thickness of predetermined width and length with predetermined finish thereon with the inner side thereof adapted to be secured in a horizontal position on a substantially vertical surface,

a left and a right end member with each one thereof formed from rectangular sheet metal of uniform thickness and rectangular shape and formed into a U shape with the opposite sides of each in predetermined parallel spaced relation and the front end of each substantially cylindrical with the rear marginal ends thereof formed into right angles of predetermined width with each said end member secured by fastener means in vertical parallel relation transverse the outer end portions of one side of said panel,

the facing inner side of each said support member having a like located slot of predetermined width and length positioned at a predetermined upward divergent angle with respect to the outer surface of said panel and at a like predetermined distance therefrom,

a straight lower cylindrical stationary rod having at least one coplanar marginal flat portion at each opposite end thereof and each said flat portion engaged in the lowermost side portion of each opposite said slot in each said support member for retaining said rod a predetermined distance parallel said panel and for preventing axial rotation thereof,

a straight cylindrical upper holding rod having at least one coplanar marginal flat portion at each opposite end thereof and each said flat portion slidably engaged in each opposite slot for limited lateral movement and positioned for gravity movement downward transversely against said lower rod for manual movement spaced above said lower bar for draping one or more neckties over said upper bar and permitting same to gravitate downward and urge said neckties against said lower bar for holding each of said neckties in flat transverse form without creased deformation.

3,853,226

WALL DISPLAY DEVICE

Harry E. Hine, and Noreen E. Hine, both of 230 N.E. 105th, Portland, Oreg. 97220

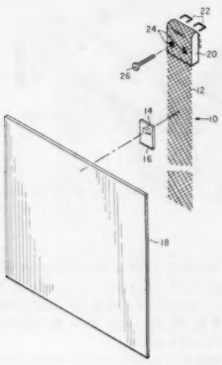
Filed May 21, 1973, Ser. No. 361,865

Int. Cl. A47g *1/16*

U.S. Cl. 211—104 5 Claims

1. A hanger device for mounting and displaying multiple articles of appreciable weight such as phonograph record albums, mirrors, pictures and the like on a wall comprising, in combination, an elongate strip of latticed hanger material having front and rear surfaces and an array of uniformly sized, regularly arranged apertures formed therein along its length

extending through said material between said front and rear surfaces, said material being sufficiently resistant to tension to support, without deformation of said apertures, a plurality of said articles when said articles are mounted thereon, and being sufficiently flexible to enable said material to be rolled or folded into a compact configuration for packaging purposes and thereafter extended into a flat elongate configuration with



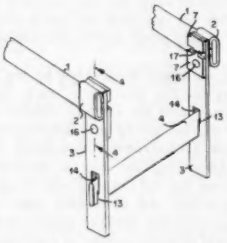
no permanent deformity therein and no tendency thereof to reassume said compact configurations, a hook adaptable for insertion through said apertures, said hook including mounting means for attaching said hook to one of said articles to be displayed on said wall, and mounting means attached to one end of said strip of hanger material for fastening said strip to a wall.

3,853,227

HANGING FILE ASSEMBLY

George H. Filipowski, 445 E. 65th St., Apt. 5C, New York, N.Y. 10021

Filed Nov. 15, 1972, Ser. No. 306,832
Int. Cl. B42f *15/00*
U.S. Cl. 211—162 **11 Claims**



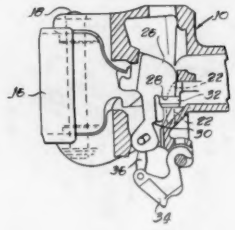
1. A hanging file assembly comprising a plurality of juxtapositioned horizontally disposed cooperative members positionable to form a secure upright structure including: rail means; locking rod means; unitary locking means in communication with said rail means and said locking rod means; said locking rod means having channel means defined by wall surfaces adapted to engage said unitary locking means; said unitary locking means being an integrally formed structure having a first portion disposed about said rail means and a second portion contiguous with said first portion, being offset therefrom by projection means extending from said first portion; said second portion being pivotally connected to said locking rod means, whereby rotation of said locking rod means into a vertical position causes engagement between said projection means and said wall surfaces within said channel means, forming a secure joint between between said locking rod means and said rail means; and cross support bar means adapted to engage slot means provided in said locking rod means.

3,853,228

RAILWAY COUPLING

Nelson D. Metzger, Alliance, Ohio, assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed May 14, 1973, Ser. No. 359,713
Int. Cl. B61g *3/08*
U.S. Cl. 213—146 **3 Claims**



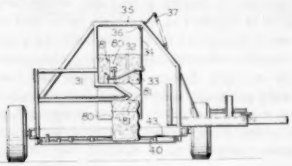
1. In a railway coupler comprising a head member, a knuckle and a knuckle thrower member supported by said head member for movement between thrown and locked positions, said knuckle thrower member being engageable by and movable with said knuckle toward said locked position, and a lock movable within said head member between thrown, lockset and locked positions, said lock being movable toward its locked position due to gravity; the improvement wherein means on at least one of said members is engagable with the other of said members to limit pivoting of said knuckle thrower member into a locked position wherein said knuckle thrower is maintained out of engagement with said lock as said lock moves from said thrown position into said lockset position toward said locked position.

3,853,229

BALE ACCUMULATOR

Gary J. Dougherty, deceased, late of Rt. 2, Deer Park, Wash. 99006 (Othilia Dougherty, executrix), and George O. Prufer, Rt. 2, Deer Park, Wash. 99006

Filed July 19, 1971, Ser. No. 163,913
Int. Cl. B65g *57/32*
U.S. Cl. 214—6 B **3 Claims**



1. A bale accumulator adapted to be pulled by and receive from a baler successive bales of hay of predetermined dimensions bound by at least one tie encircling each bale in a vertical plane, said accumulator adapted to turn and assemble a predetermined number of said bales into a cluster and discharge the cluster onto the surface of a field with said ties disposed in horizontal planes, comprising:

a mobile frame adapted to be pivotably connected to and towed by a baler with an articulated bale guide having a relatively short trough like element pivotally supported about a vertical axis by the baler to attenuate the abrupt-

ness of the angle between the baler and bale accumulator to aid bale passage therebetween;

a generally horizontal bale bed mounted on said frame for tilting about an axis generally transverse to the direction of travel of said accumulator and adapted to receive plural bales thereon and discharge the bales received rearwardly thereof in a prearranged cluster wherein

an inclined trough is adapted to receive successive bales each bound by a tie encircling its bale in a vertical plane, direct movement of said bales to a point above said bed, and deposit the said bales in reoriented contiguous side by side relationship on said bed with their ties in horizontal planes and their longitudinal axes substantially parallel with the direction of travel of said bale accumulator, whereby to form a stable cluster of plural bales;

said articulated bale guide extending across the point of interconnection between the baler and the mobile frame and to within one bale length of the inclined trough;

means for advancing on said bed transversely of the direction of movement each oriented bale received from said bale orienting means one bale width to permit receipt of subsequent bales; and

means adapted to tilt said bed and discharge the cluster with the bales in substantially the same orientation onto the surface of the field traversed by said accumulator; wherein the inclined trough further includes

an elevated ledge more narrow than one-half the width of a bale and disposed above said bed and adapted to support the bottom edge only of a bale,

a vertical side frame rigidly joined to one lateral edge of said elevated ledge to support a bale on a first vertical edge, a gate swingable on an axis parallel to the longitudinal axis of said bale and releasably secured to confine a second vertical edge of a bale against removal laterally from said ledge, and means adapted to open said gate releasing the second edge of the bale to allow the bale to fall by gravity onto said bed and traverse a 90 degree rotation effected by said first bale edge being momentarily supported by said ledge during the initial falling movement of said bale.

3,853,230

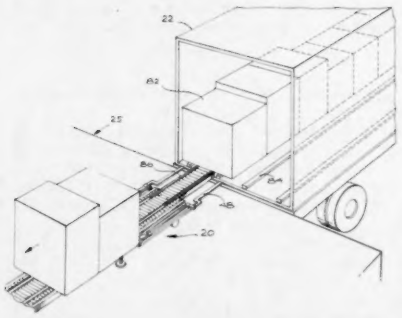
LOADER/UNLOADER CONVEYOR SYSTEM

Gerhard L. Schultz, 7271 Natal Dr., Westminster, Calif. 92683

Continuation of Ser. No. 167,229, July 29, 1971, abandoned. This application Aug. 1, 1973, Ser. No. 384,455

Int. Cl. B65g *67/02*

U.S. Cl. 214—89 **23 Claims**



1. In a dock located conveyor system for loading and unloading cargo in a cargo shipping device by slidably engaging the underside of the cargo, the combination comprising:

a. an elongate horizontal main frame assembly with front and rear ends;

b. conveyor means with a horizontal top plane mounted on and extending longitudinally of said frame assembly;

c. fork-type lift means mounted at the front end portion of said frame assembly means mounting said lift means on said frame assembly for vertical and longitudinal movement relative to said frame assembly:

d. first drive means to move the lift means longitudinally relative to the frame assembly and the conveyor means between an extended position where it projects forward from the front end of the frame assembly and conveyor means and a retracted position where it occurs coextensive with the front end portion of the frame assembly and conveyor means; and

e. second drive means to move the lift means vertically relative to said frame assembly and conveyor means from a down position where said lift means occurs below the top plane of the conveyor means to elevated positions where it occurs above the top plane of the conveyor means.

3,853,231

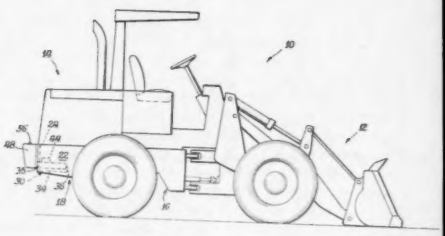
VEHICLE COUNTERWEIGHT APPARATUS

Richard W. Luttrell, Morton, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 21, 1972, Ser. No. 282,139

Int. Cl. E02f *3/00*

U.S. Cl. 214—142 **4 Claims**



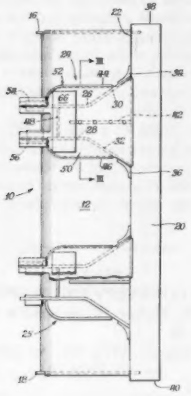
1. In a vehicle incorporating a frame, a counterweight sized to be shifted in a generally horizontal direction into an opening in a portion of the frame so as to be positioned at least partially disposed within the frame and be removable from said frame portion through said opening in a generally horizontal direction; support means fixed to the frame and in contact with the bottom portion of the counterweight to thereby support the counterweight when the counterweight is so positioned; and, means for selectively securing the counterweight relative to the frame when said counterweight is so positioned, and further comprising a second counterweight adapted to be fixed to the frame portion and removable therefrom, wherein the second counterweight is adapted to be fixed to the frame portion over the opening to limit removal of the positioned first-mentioned counterweight from said frame portion, the second counterweight being removable therefrom to allow said removal of the first counterweight from the frame portion through the opeining, wherein the first counterweight is sized to fit into said opening to be positioned fully disposed within the frame, and further including means for limiting the downward movement of the first counterweight under its own weight when said first counterweight is being fitted into said opening and into position within the frame and is being only partially supported by said support means, wherein said means for limiting downward movement of the counterweight comprise first and second upper members respectively fixed to the first and second sidewalls inwardly thereof and above the first and second support members respectively.

3,853,232

BUCKET REINFORCEMENT STRUCTURE

Stanley A. E. Oke, Sugar Grove, and Robert F. Shankwitz, Oswego, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 11, 1972, Ser. No. 287,671
Int. Cl. E02f 3/70
U.S. Cl. 214—145 11 Claims



1. In a bucket construction having a bottom wall portion, a rear wall portion extending therefrom, a pair of end wall portions between which the rear wall and bottom wall portions extend, and a cutting edge fixed to and running along the forward edge of the bottom wall portion, reinforcement means comprising: first and second rib members spaced apart and fixed externally to the bottom wall portion and running continuously from the cutting edge, and fixed relative thereto, to the rear of the bottom wall portion; and, a plate fixed to the extending edges of the first and second rib members and running therealong, the rib members and plates together forming a box section running transversely of the cutting edge, wherein the plate is fixed to the cutting edge, wherein the reinforcement means further comprise a third rib member fixed to the bottom wall portion externally thereof intermediate the first and second rib members and running transversely of the cutting edge, the plate being fixed to the extending edge of the third rib member, and, wherein the first and second rib members flare apart in the direction of the cutting edge when proximate to the cutting edge.

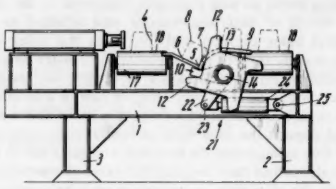
3,853,233

METHOD OF MANIPULATING POLYGONAL CROSS-SECTION CAST COPPER BARS

Otto Kreuz, Duisburg, and Stefan Raab, Essen, both of Germany, assignors to Demag Aktiengesellschaft, Duisberg, Germany

Division of Ser. No. 152,867, June 14, 1971, Pat. No. 3,759,401. This application Dec. 21, 1972, Ser. No. 317,234
Claims priority, application Germany, June 18, 1970, 2029999
Int. Cl. B65g 7/00
U.S. Cl. 214—152 4 Claims

1. A method of manipulating polygonal cross-section cast copper bars having, at their ends, tapered projecting tips flush with a reference base surface thereof, said method comprising the steps of transporting a bar lengthwise to a position adjacent and parallel to a tipping trough; responsive to arrival of the bar at such position, utilizing the leading projecting tip of the bar to determine whether the bar, at such position, is resting on its reference base; displacing the bar sidewise into the tipping trough; and, responsive to a determination that the bar is not resting on its reference base, initiating a number of tilting movements of the bar, about its corner edges, in the



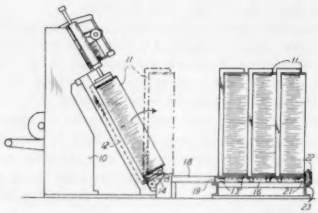
tipping trough, sufficient to cause the bar to rest on its reference base in the tripping trough.

3,853,234

SHEET STACK HANDLING APPARATUS

Anton R. Stobb, Pittstown, N.J., assignor to Stobb, Inc., Clinton, N.J.

Filed Oct. 25, 1973, Ser. No. 409,733
Int. Cl. B65g 57/28
U.S. Cl. 214—300 23 Claims



1. Apparatus for handling discrete stacks of sheets, comprising a set of wheels for independently movably supporting each stack of sheets, a pallet having a plurality of parallel trackways for receiving and guiding said wheels and with each of said trackways being disposed at an angle relative to the horizontal and oriented longitudinally of said trackways for wheeled movement of said stacks along said trackways in the direction of decline of the angle of said trackways and under only the force of gravity, and means operatively associated with said pallet for the control of said pallet to permit the shifting of said pallet in the direction transverse to the longitudinal direction of said trackways for separately longitudinally aligning each of said trackways with a station location which accommodates movement of said stacks relative to said pallet.

3,853,235

APPARATUS FOR OPENING AND EMPTYING A CONTAINER

Gerard L. Lambert, and Charles A. Greenlay, both of Asbestos, Quebec, Canada, assignors to Johns-Manville Corporation, Greenwood Village, Arapahoe County, Colo.

Division of Ser. No. 228,001, Feb. 22, 1972, Pat. No. 3,757,973. This application Apr. 20, 1973, Ser. No. 353,041
Int. Cl. B65g 65/00
U.S. Cl. 214—305 13 Claims

1. A device for emptying the contents of a closed, flexible container, which comprises:

a. a support;

b. a hopper adjacent said support;

c. means for moving said container on said support toward said hopper;

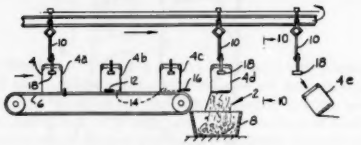
d. means for perforating said container along a plurality of generally parallel lines each substantially aligned with the

direction of travel of said container on said support, with at least one pair of said plurality of generally parallel lines being disposed with one line, respectively, proximate to each of the transverse extremity portions of said container, said transverse extremity portions being determined with reference to said direction of said container on said support;

e. means for perforating said container along at least one line extending transversely across said container from a point adjacent one of said pair of generally parallel lines proximate to one of said transverse extremity portions to a point adjacent the other of said pair of generally parallel lines proximate to the other of said transverse extremity portions of said container;

f. means for releasably gripping the perforated container above the lines of perforations;

g. a conveyor means for moving said releasable gripping means, said means for releasably gripping the perforated container extending beneath said conveyor means and into engagement with said container,



h. said conveyor means and releasable gripping means adapted to move the gripped container from said support to a position overlying said hopper, whereby the motion progressively deprives the bottom of said container of support, and the weight of said contents causes said container to open along said lines of perforation and leaving the opened portion of the container attached to the remaining portion of the container, thereupon releasing said contents from said container and depositing said contents from said container and depositing said contents in said hopper;

i. said conveyor means adapted to move the empty container away from said hopper and further including means for releasing the grip on said container, and

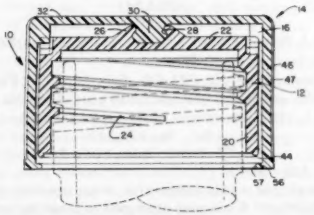
j. wherein all of said means for releasably gripping and for moving said gripped container are located above said generally parallel lines whereby the contents released from said container do not contact said gripping and moving means.

3,853,236

SAFETY CLOSURE UNIT

Efrem M. Ostrowsky, Highland Park, Ill., assignor to Federal Tool & Plastics, a division of VAC Corporation, Chicago, Ill.

Filed Dec. 6, 1973, Ser. No. 422,264
Int. Cl. B65d *55/02;* **A61j** *1/00*
U.S. Cl. 215—220 **14 Claims**



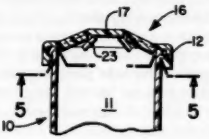
1. A safety closure unit including, an inner or closure cap for application to a container, an outer or actuator cap superimposed on said inner cap, means on the top wall of each of said caps securing said caps against unauthorized axial separation, said outer and inner caps having complementary engaging surfaces on the underside of the top wall of the outer cap adjacent the skirt of said outer cap and on the upper portion of said inner cap adjacent the top wall of the inner cap to cause interengagement therebetween so that in the normal position of the outer cap, rotation of the outer cap will simultaneously rotate the inner cap to secure the inner cap on the container, the top wall of one of said caps being sufficiently yieldable to permit axial deflection relative to the top wall of the outer cap in one direction to permit the outer cap to be rotated in the opposite direction with respect to the inner cap without effecting an unsecurement of said inner cap from the container, said yieldable top wall also being axially deflectable when a downward manual pressure is applied against the outer cap causing interengagement of said engaging surfaces and locking said outer cap with respect to said inner cap to rotate said caps simultaneously to cause unsecurement of said inner cap relative to the container.

3,853,237

VIAL OR CONTAINER WITH SAFETY CLOSURE

Paul A. Marchant, Kansas City, Mo., assignor to Ethyl Development Corporation, Kansas City, Mo.

Filed Nov. 16, 1972, Ser. No. 307,075
Int. Cl. B65d *55/02, 85/56;* **A61j** *1/00*
U.S. Cl. 215—224 **6 Claims**



1. In a container and safety closure cap therefor, the combination comprising:

a. a container having a generally cylindrical, open neck portion, the outer end of said neck being provided on its outer surface with an annular, outwardly projecting shoulder; and

b. a one-piece, flexible, thermoplastic safety closure cap having a circular central section, a downwardly sloping conical section attached to said central section, an annular flat section attached to the lower end of said conical section, and a generally cylindrical, solid, integral skirt portion attached at its upper end and depending from said annular flat section, the interior sidewall of said skirt providing a continuous, annular, inwardly projecting shoulder adjacent its lower end, which shoulder is adapted to be snapped over said outer end of said neck and to be in abutment with the underside of said shoulder provided on said neck.

3,853,238

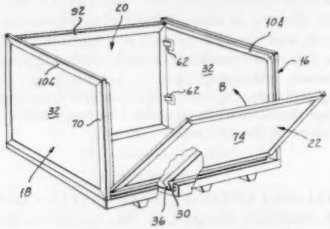
SMOOTH OPERATING CARGO BOX

August G. Luisada, Waymart, Pa., and Leonard P. Frieder, Sr., deceased, late of Waverly, Pa. (by Leonard P. Frieder, Jr., executor), assignors to Gentex Corporation, New York, N.Y.

Filed Sept. 5, 1972, Ser. No. 286,462
Int. Cl. B65j *1/02*
U.S. Cl. 220—1.5 **8 Claims**

1. A smooth operating cargo box including in combination a base, side panels, a back panel, a front panel and a top panel, first interengageable means running along the side edges of said base and along the bottom edges of the side panels for connecting said side panels to said base, second interengageable means along the bottom and side edges of the back panel

and along the back edge of the base and back edges of the side panels, said second interengageable means comprising respective inwardly opening side hooks running along the back edges of said side panels and outwardly opening end hooks running along the side edges of the back panel, said second interengageable means being responsive to sliding movement of the back panel from the inside toward the outside of said box in a direction perpendicular to the plane of the back panel to bring said end hooks into engagement with said side hooks to connect the back panel to the base and side panels, third interengageable means along the bottom and side edges of the



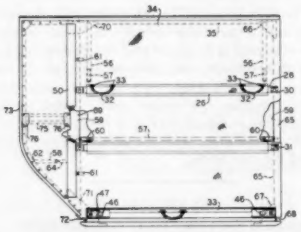
front panel and along the front of the base and front edges of the side panels responsive to pivotal movement of the front panel around its bottom edge in a direction from outside toward the inside of said box for connecting said front panel to said base and interengaging the front panel with the side panels, and fourth interengageable means along the back and side edges of the top panel and along the top edge of the back panel and top edges of the side panels responsive to sliding movement of said top panel in the direction of the plane thereof from back to front of said box for connecting said top panel to said back and side panels.

3,853,239

CARGO CONTAINER HAVING ADJUSTABLE SHELVES

Oscar W. Meller; John W. Lovich, and Frank C. Morse, all of Akron, Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Mar. 29, 1973, Ser. No. 346,211
Int. Cl. B65d *87/00*
U.S. Cl. 220—1.5 **9 Claims**



1. A baggage cargo container, comprising:

a substantially cubicle framework connecting a top, base, end panels, and trapezoidal end section;

at least one fabric door connected in a sealed manner along one edge thereof to the cubicle framework;

sealing means about the remaining edges of the fabric door for effectuating seals between the fabric door and the cubicle framework;

adjustable securing means within the container for securing cargo container therein between the securing means and a portion of the cargo container; and

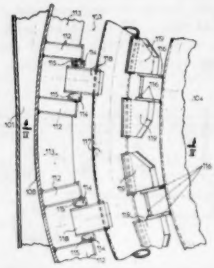
a floor leveling means within the trapezoidal section for providing a level base within that section for storing luggage or baggage.

3,853,240

ANTIROLLING AND ANTIPITCHING SUPPORTING METHOD AND DEVICE FOR A TANK DURING TRANSPORTATION

Jean Alleaume, Saint-Cloud, France, assignor to Technigaz, Paris, France

Filed Nov. 2, 1972, Ser. No. 303,012
Claims priority, application France, June 6, 1972, 72.20337
Int. Cl. B63b *25/08*
U.S. Cl. 220—15 **16 Claims**



1. In a construction including: a self-supporting structure undergoing roll and pitch rocking motions about two structure-bound orthogonal geometrical axes of swing, respectively; a rigid tank supported mainly in weight-bearing relationship and at least partially encompassed by said structure; and an auxiliary device for bodily constraining said tank against roll and pitch with respect to said structure while allowing substantially free thermal expansion and contraction thereof; the improvement consisting in that said device comprises: at least one ring externally surrounding said tank and interposed in spaced relationship between the later and said structure; said ring being substantially parallel to the plane defined by the respective directions of said axes of swing; movably co-operating discrete keying means integral with said ring, structure and tank, respectively and providing slidable engagement of said ring with said structure and tank, respectively, to hold said ring against body motion parallel to said plane at least relative to said structure while allowing substantially free thermal expansion and contraction of said ring as well as substantially free body displacements thereof in parallel relation perpendicular to said plane; and weight-bearing means for unilaterally supporting said ring against its own weight while allowing its thermal expansion and contraction and body displacements therefrom.

3,853,241

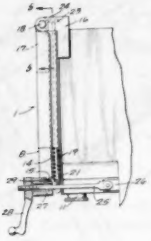
CHEESE MAKING APPARATUS

Norman J. Peters, Fon du Lac, Wis., assignor to DEC International, Inc., Madison, Wis.

Division of Ser. No. 871,441, Feb. 10, 1970, Pat. No. 3,696,950, which is a continuation-in-part of Ser. No. 669,572, Sept. 21, 1967, abandoned. This application July 17, 1972, Ser. No. 272,349
Int. Cl. B65d *53/00*; **E06b** *7/16*
U.S. Cl. 220—344 **4 Claims**

1. In a cheese making apparatus, a vat structure to contain cheese curd and having an open end and having an end surface bordering the open end, a door structure to enclose the open end of the vat and having a surface facing said end surface, said surface having a joint therebetween, hinge means for hinging the door structure to the vat structure, a seal

assembly to seal the joint between said surfaces and including a generally U-shaped flexible tubular sealing member having a pair of end sections and a central section connecting the end sections, said seal assembly also including a rigid generally U-shaped reinforcing member disposed within said tubular sealing member with the ends of said reinforcing member projecting outwardly of the corresponding end sections of said



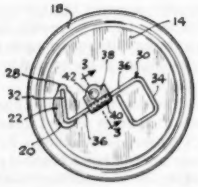
sealing member, connecting means to connect said projecting ends of the reinforcing member to one of said structures adjacent said hinge means, said central section of the sealing member being free of attachment to the surface of said one structure so that said central section is freely movable away from the surface of said one structure to clean therebetween, and clamping means for clamping the door structure to the vat structure.

3,853,242

EASY OPEN END

Arthur P. Zundel, Chicago, Ill., assignor to National Can Corporation, Chicago, Ill.

Filed Jan. 24, 1973, Ser. No. 326,238
Int. Cl. B65d *17/20*
U.S. Cl. 220—267 **12 Claims**



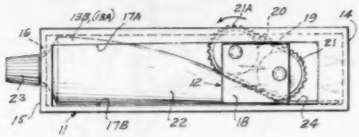
1. An easy open end for containers and the like comprising, an end panel having a substantially planar top surface, an opening through said planar surface, said opening defined by a weakened line portion in said end panel, a lever member having first and second end portions and an elongated central portion connecting said ends, said first end overlying said weakened line portion, said second end distal therefrom, said lever member rotatable about the axis of its central connecting portion from an initial first end position overlying said weakened line portion to a second position through said opening and beneath said end panel planar top surface, and permanent connecting means for positioning said lever member in relation to said end panel, said connecting means holding said lever member elongated central portion in fixed relation to said end panel, said connecting means being positioned to have said first and second end portions extend generally parallel to said planar surface in a stored position after said weakened line has been severed.

3,853,243

TOOTHPASTE DISPENSER

Andrew Forman, 45-11 220 Pl., Bayside, N.Y. 11061

Filed Aug. 27, 1973, Ser. No. 392,032
Int. Cl. B65d *35/28*
U.S. Cl. 222—101 **1 Claim**



1. A toothpaste dispenser comprising in combination, a box like frame that includes a rear wall, opposite end walls, and opposite longitudinal side walls, a carriage comprised of a pair of rectangular side plates each one of which is slideable within an elongated slot formed in each one of said frame side walls and extending between said end walls, each of said carriage side plates having bearing means for the ends of a pair of transversely extending rollers rotatably supported between said side plates, the axes of said rollers being parallel to each other, an endless belt being supported around the outer sides of said rollers, said rollers being spaced apart so as to keep the sides of the belt straight, one of said axes being closer than the other axis to said frame rear wall, the other of said axes being closer to one of said end walls, a top wall of said frame having an enlarged opening extending longitudinally between said end walls to permit placement to a toothpaste tube into the central interior of said frame, said one of said end walls having a central circular opening to receive there through a toothpaste dispensing neck formed on one end of said toothpaste tube, the protruding outward end of said neck adaptable to receive a toothpaste tube cap, the opposite end of said toothpaste tube being inserted into a wedge shaped space formed between said rear wall and one side of said endless belt, said belt side being angularly disposed respective to said rear wall, said wedge shaped space formed between said rear wall and said belt side converging in a direction which is away from said one of said end walls, and the outer surface of said endless belt having treads whereby manual rotation of said endless belt causes said carriage to advance slideably along said frame side wall slots to squeeze said toothpaste tube within said wedge shaped space.

3,853,244

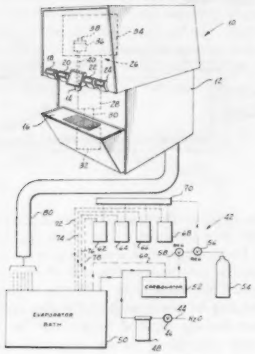
REMOTE DRINK DISPENSER

Charles G. Neumann, Palatine, Ill., assignor to Reynolds Products Inc., Schaumburg, Ill.

Filed Sept. 13, 1971, Ser. No. 180,006
Int. Cl. B67d *5/56*
U.S. Cl. 222—129.1 **5 Claims**

1. A beverage dispenser for selectively delivering one of a plurality of drinks at a dispensing location including in combination, a plurality of beverage supply means, means including a plurality of respective normally closed valves adapted to be opened to connect said supply means to said delivery location, a container for holding a supply of ice, said container holding a supply of ice, said container having an exit opening, motor-driven means inside said container for moving ice through said exit opening, a delivery element mounted adjacent to said exit opening and adapted to be driven to deliver ice from said exit opening to said dispensing location at a predetermined rate, a motor adapted to be energized to drive said delivery element, a plurality of manually actuatable members, means mounting said members adjacent to said delivery location for movement between home positions and actuated positions, respective means responsive to the presence of said members in their actuated positions for selectively holding said valves open for the time during which a member is in its actuated position and

respective means responsive to the presence of said members in their actuated positions for energizing said motor for the time during which any member is in its actuated position, the



arrangement being such that the valve corresponding to an actuated member closes and said motor is deenergized upon the return of an actuated member to its home position.

3,853,245

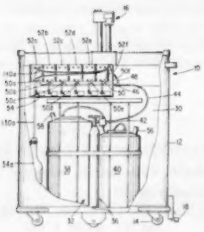
BEVERAGE DISPENSER

William C. Branch, and Jack J. Booth, both of P.O. Box 507, Carrollton, Tex. 75006

Filed July 16, 1973, Ser. No. 379,641

Int. Cl. B67d *5/54*

U.S. Cl. 222—144.5 **6 Claims**



1. A fluid dispenser which comprises:

a piston mounted in a cylinder with a piston rod extending through a closed end thereof,

a supply line adapted to lead from a fluid storage vessel into a first chamber of said cylinder,

a discharge line terminating in a dispensing nozzle and connected into the first chamber of said cylinder,

a first gas pressure line leading to a second chamber of said cylinder through a normally closed valve which is opened by a movement of said piston in the chamber,

a second gas pressure line leading to the second chamber of said cylinder through a manual control valve to initiate the movement of said piston thereby opening said normally closed valve upon an opening of said manual valve, a stop on said piston rod below said closed end for venting the second chamber of said cylinder to atmosphere, and resilient means in said cylinder to return said piston to an initial position to close said normally closed valve.

3,853,246

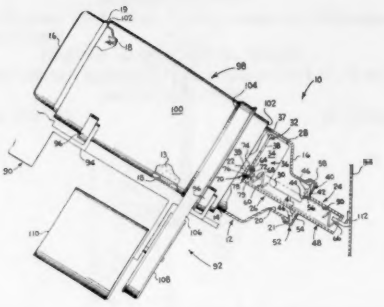
DISPOSABLE DISPENSER

Robert Clark Dubois, Fairfield, Conn., assignor to Pitney-Bowes, Inc., Stamford, Conn.

Filed Feb. 15, 1974, Ser. No. 443,124

Int. Cl. G01f *11/24*

U.S. Cl. 222—168 **7 Claims**



1. A disposable dispenser adapted to carry a replenishing supply of developer material in a copier having means for actuating the dispenser to discharge developer material from the dispenser, said dispenser comprising:

a. a receptacle having an axis of rotation and an outlet orifice; means adapting the receptacle for cooperation with the actuating means for angular disposition of the receptacle and for rotation of the receptacle about said axis to permit the developer material to flow under the influence of gravity to the outlet orifice;

b. means for assisting the flow of developer material to and through the outlet orifice for discharge from the dispenser, said flow assisting means including a transporting member and a metering member, said transporting and metering members respectively being elongated members extending through the outlet orifice;

c. means for fixedly securing the transporting member to the receptacle for rotation therewith, the metering member adapted to be held stationary against rotation thereof by the actuating means as the actuating means rotates the receptacle; and

d. means for interlocking the metering member to the transporting member to permit relative rotation therebetween, said interlocking means including a button-like member having a flange portion and a channel portion, the flange portion engaging the transporting member, and the channel portion engaging the stationary metering member to maintain the flange portion in engagement with the rotating transporting member.

3,853,247

VIBRATORY BIN ACTIVATOR

Eugene A. Wahl, 460 Ridgewood Ave., Glen Ridge, N.J. 07028

Filed Mar. 8, 1972, Ser. No. 232,787

Int. Cl. B65g *3/12*

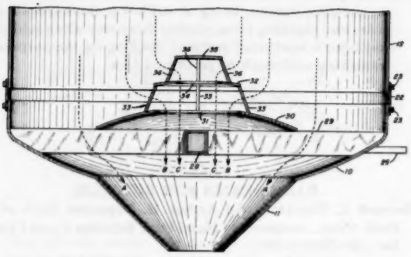
U.S. Cl. 222—199 **5 Claims**

1. Apparatus for promoting the flow of material from a bin having a bottom opening, said apparatus comprising,

a. a concave material-receiving member terminating in a discharge opening and positioned to receive material from the bin, said member having an inlet opening corresponding to the bottom opening of the bin,

b. a first inverted conical baffle secured to the material-receiving member and having a central opening formed therein, the peripheral surface of said baffle being spaced from the inner wall of the material-receiving member,

c. a second inverted conical baffle secured to and axially spaced from the said first baffle, said second baffle having a diameter smaller than that of said first baffle and being positioned above the inlet opening of the material recieving member,

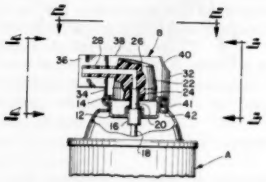


d. means for vibrating the material-receiving member, and means suspending the material-receiving member from the bin.

3,853,248
GUARD FOR SPRAY VALVES

Hugh C. Williamson, Willoughby, Ohio, assignor to Universal Metal Products, Inc., Wickliffe, Ohio

Filed Apr. 8, 1974, Ser. No. 458,784
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.12 **13 Claims**



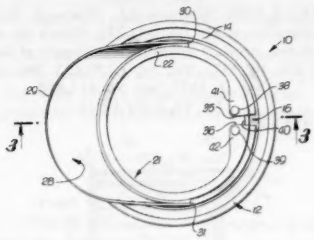
6. A guard for spray valves comprising; a longitudinally-split substantially cylindrical resilient guard member having top and bottom edges and projections extending outwardly therefrom at said split, a recess in said top edge opposite said split, and a plurality of circumferentially-spaced inwardly extending detents adjacent said bottom edge.

3,853,249
POURING SPOUT FOR CANS

Casper J. Weir, Jr., Rt. 3, Box 215-B, San Luis Obispo, Calif. 93401, and Fred Keyes, 22693 Woodridge, Hayward, Calif. 94541

Filed Apr. 2, 1973, Ser. No. 347,227
Int. Cl. B65d *5/74*
U.S. Cl. 222—570 **3 Claims**

1. A pouring spout for cans which embody a rim area structure comprising an annular channel of generally U-shaped section open at the top, formed of radially spaced outer and inner vertical walls joined by a bottom wall, the pouring spout comprising a base element of a generally C ring plan and of a generally U-shaped cross section opening horizontally outward, embodying generally parallel upper and lower flanges joined by an inner vertical annular wall, the upper and lower flanges being of sufficient radial dimensions and spaced apart a distance adapting them to engage the top of the inner vertical wall of the can channel and the bottom wall of the latter respectively, the base element being formed of a resilient material and the annular wall thereof having a diameter when in repose greater than the diameter of the inner wall of the can channel and contractable to provide clearance for the base element to be inserted and positioned for engagement with the can channel whereby upon release and expansion the base element will engage the can channel at the top of the inner wall and the bottom thereof, thereby sealing off the interior of

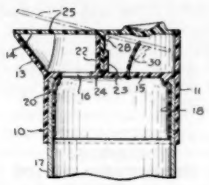


the can from the external portion of the rim area, and a dished lip on the base element projecting radially outward beyond the rim area of the can, the lip being generated at opposite points on the base element separated by at least 180° and inclining from the points of generation in uninterrupted curves which merge at their peak.

3,853,250
COVER FOR DECANTER OR LIKE DISPENSING CONTAINER

Melvin Alpern, 9800 McKnight Rd., Pittsburgh, Pa. 15237

Continuation of Ser. No. 291,874, Oct. 16, 1972, abandoned. This application Feb. 4, 1974, Ser. No. 439,013
Int. Cl. B67d *3/00*
U.S. Cl. 222—517 **8 Claims**



2. A handle free dispensing cap adapted for use on a decanter or like liquid dispensing container having a straight neck comprising:

a. a tubular side wall of grasping length having spaced lower and upper ends including:
   1. a lower portion extending downwardly from an intermediate level to said lower end adapted to fit over a neck of such container and having means to make fluid tight engagement therewith, and
   2. an upper portion extending upwardly from said intermediate level to said upper end having an upwardly opening pouring spout;

b. a cover of size and shape to fit entirely within said side wall and close the upper portion of said cap mounted thereon adjacent to said upper end for movement around an intermediate axis behind said pouring spout and between said side wall having:
   1. a portion in front of said axis adapted for swinging movement from one position closing said pouring spout to a second position opening it, and
   2. a portion at the rear of said axis that can be depressed within said side wall to swing the front portion upwardly from the closed position to the open position; and

c. means within said side wall resiliently biasing said cover to close position.

3,853,251

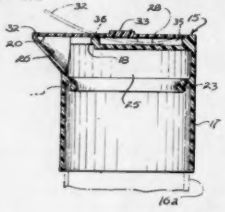
COVER FOR DECANTER OR LIKE LIQUID DISPENSING CONTAINER

Melvin Alpern, 9800 McKnight Rd., Pittsburgh, Pa. 15237

Continuation of Ser. No. 342,232, March 16, 1973, abandoned, which is a continuation-in-part of Ser. No. 189,454, Oct. 14, 1971, Pat. No. 3,739,957. This application Nov. 1, 1973, Ser. No. 411,858

Int. Cl. A47g 19/14

U.S. Cl. 222—475 14 Claims



1. A removable cover of plastic material, as for a decanter or like liquid dispensing container having a neck terminating in an upper portion having a peripheral upper edge, said cover comprising: a handle free cap having a tubular outer skirt of grasping length adapted to be supportively gripped between the upper and lower ends thereof by a user's fingers; an integral closure wall at the upper end of said skirt; an annular lip integrally connected to said skirt at an intermediate level having a portion extending radially inwwardly and a portion extending axially downwardly of the same inwardly of said closure wall, thereby defining an annular groove adapted to receive and make fluid-sealing engagement of said annular lip with the upper portion of the neck of a container; and a pouring spout provided on the upper portion of said skirt above said annular lip having a passage therethrough for dispensing liquid from the container past said lip, said closure wall leaving said passage in the pouring spout open for discharging liquid therethrough.

3,853,252

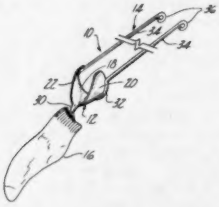
ORTHOPEDIC DEVICE

Giuseppe M. Scianimanico, 25401 Firwood, Warren, Mich.

Filed May 1, 1973, Ser. No. 356,111

Int. Cl. A47j 51/06

U.S. Cl. 223—111 2 Claims



1. A device for facilitating the putting on and the removal of stockings, said device comprising an elongated U-shaped slide member having rounded side walls extending upwardly from the base of said slide member, the front edges of said rounded side walls being inclined with respect to said base;

a handle comprising a pair of parallel rod members terminating in an integrally formed rounded connecting portion having a shape complimentary to the rear end of said slide member and attached to said rear end of said slide member on an exterior surface thereof, said handle for grasping by a user whereby a stocking engaged over the front end of said slide member is placed on the user's foot by withdrawal of said slide member to pass the foot through the front end of said slide member said rounded connecting portion being of sufficient thickness to prevent said stocking from passing thereover when said slide member is reinserted into said stocking for the purpose of removing said stocking from said foot.

3,853,253

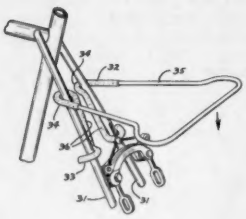
BAG CARRIER FOR BICYCLES

Howard C. Hawkins, and Arthur B. Engstrom, both of St. Paul, Minn., assignors to Hazel Park Schwinn Cycle Center, Inc., St. Paul, Minn.

Filed Nov. 16, 1972, Ser. No. 307,126

Int. Cl. B62j 7/04

U.S. Cl. 224—39 2 Claims



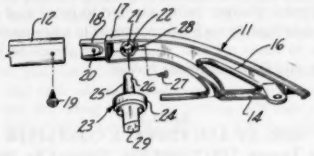
1. A carrying apparatus for quick and easy attachment to and detachment from the rigid uprights of the rear fork of a bicycle frame and above the crossbar which interconnects the uprights, comprising a single length of semirigid wire having a middle portion defining a rearwardly extending, substantially horizontal load-carrying loop and the semirigid wire also having forward end portions defining attachment legs for securing to the fork uprights, each leg being free of the other leg and having spaced upper and lower substantially semicicular and oppositely oriented load-carrying bends to lie against and receive a respective fork upright therein, the lower bend bearing forwardly against the rear face of the fork upright and downwardly on the crossbar, and the upper load-carrying bend bearing rearwardly against the forward face of the fork upright and preventing downward tipping of the horizontal loop, each leg also having an upright spacer section extending between the upper and lower bends and extending along and in closely spaced relation to the spacer section of the other leg to lie between the fork uprights and to bear outwardly against the respective fork uprights in a direction transversely of the bicycle frame, and the upper and lower extremities of the legs adjacent the bends facing inwardly in confronting relation with the spacer sections to bear inwardly against the fork upright in a direction transversely of the bicycle frame, the upper extremities of the legs extending substantially horizontally rearwardly to the load-carrying loop and extending forwardly and thence transversely inwardly toward each other and into said upper bends to bear rearwardly against and to embrace and confine the uprights of the rear fork and position the load-carrying loop well above the lower bends of the legs which bear downwardly on the fork crossbar.

3,853,254

AUTOMOBILE TOP LUGGAGE RACK

Frederick A. Helm, 2900 E. Jefferson, Detroit, Mich. 48207

Filed Mar. 14, 1973, Ser. No. 341,128
Int. Cl. B60r 9/04
U.S. Cl. 224—42.1 D 10 Claims



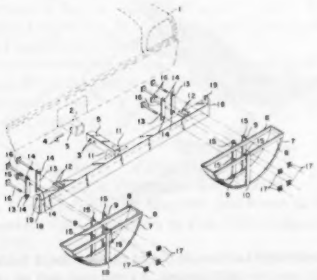
1. In a car top carrier, the combination comprising
a pair of stanchions,
a side rail,
means for fixing the side rail to one of the stanchions,
each said stanchion having a laterally extending opening therein,
an insert having a portion projecting into said opening,
means for locking the insert in angularly adjustable position with respect to the stanchion,
and a cross rail,
said cross rail and said inserts having telescoping portions forming a connection therebetween,
said cross rail having the major portion thereof of non-circular cross section,
whereby the angular position of said cross section with respect to said stanchions can be adjusted to various positions by adjusting the angular position of each insert with respect to the stanchion,
wherein said means for angularly adjusting said insert with respect to said stanchion comprises a groove having angularly related surface portions in the periphery of said projection of said insert,
a screw threaded into a portion of said stanchion extending into said groove,
wherein said projecting portion of said insert is frusto-conical in cross section and said opening has a complementary cross section.

3,853,255

MOTORCYCLE CARRIER

Jimmy J. Spencer, 348 Clearfield Ave., Chesapeake, Va. 23320

Filed Aug. 1, 1973, Ser. No. 384,404
Int. Cl. B60r 9/06
U.S. Cl. 224—42.03 B 2 Claims



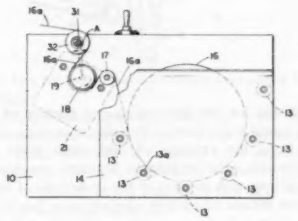
1. A motorcycle carrier adapted to be detachably mounted to a trailer hitch affixed to the frame of an automobile or a truck and comprising a rectangular shaped connecting bar mounting sleeve, adapted for telescoping into a fixed rectangular sleeve hitch by telescoping therein with connecting pin and pin holes for attachment, integrally affixed to a rectangular-shaped main structural support member having arc-shaped carrier wheel wells detachably mounted on said structural support member at predetermined positions to receive the wheels of a motorcycle, said wheel wells being mounted by front and rear vertical connecting brackets with bolts therethrough and said wheel wells being formed of arc-shaped wells reenforced with horizontal and vertical carrier supports for attaching the same to the main support member, with an L-shaped protective means on each end of the main support member.

3,853,256

TAPE FEEDING APPARATUS

Everett G. Shaffstall, Indianapolis, Ind., assignor to Shaffstall Equipment Inc., Indianapolis, Ind.

Filed Aug. 13, 1973, Ser. No. 388,113
Int. Cl. B65h 23/04
U.S. Cl. 226—34 2 Claims



1. A tape feeding apparatus for holding a roll of information-storing tape and supplying tape from the roll upon demand to a photo composing machine or the like, said tape feeding apparatus including a vertical plate, means extending from the front face of said plate for supporting a tape roll for free rotation on a horizontal axis, a first idler roller mounted on said vertical plate for rotation about a horizontal axis displaced upwardly and laterally of said tape roll, a drive roller supported for rotation on an axis adjacent to and horizontally aligned with said first idler roller axis, an electric motor for driving said drive roller mounted on the rear face of said vertical plate, said drive roller carrying a plurality torroidal elastomeric rings encircling its curved outer surface, a final idler roller mounted on said plate for rotation on a horizontal axis parallel to and spaced above said drive roller axis, a line joining the axes of rotation of said final idler roller and said drive roller being inclined a small angle off the vertical in a direction away from said first idler roller, tape from a tape roll supported on said plate being threaded over said first idler roller, under said drive roller and over said final idler roller, whereby as long as tape leaving said final idler roller is under tension said drive roller strips tape from the tape roll and delivers it to said final idler roller, said drive roller releasing said tape to halt the tape movement when the tape is not tensioned as it leaves said final idler roller.

3,853,257

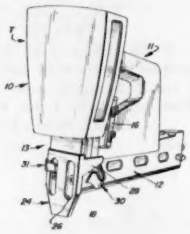
SELF-CLEARING NOSE SECTION FOR A POWERED FASTENER-DRIVING TOOL

Garry R. Perkins, Palatine, Ill., assignor to Spotnails, Inc., Rolling Meadows, Ill.

Filed June 18, 1973, Ser. No. 370,770
Int. Cl. B25c 5/06
U.S. Cl. 227—123 3 Claims

1. In a powered fastener-driving tool having a housing, a fastener-magazine and feed assembly associated with said

housing and having a discharge end thereof disposed adjacent the underside of the housing, a reciprocating driver element mounted within the housing and having an end portion thereof protruding from the underside of the housing; a nose section mountable on the underside of the housing for accommodating the protruding end portion of the driver element and the discharge end of the fastener-magazine and feed assembly, said nose section comprising an inner plate fixedly mountable on the discharge end of the fastener-magazine and feed assembly, said inner plate having a passageway through which fasteners intermittently pass from the fastener-magazine and feed assembly, an outer plate disposed in face-to-face relation with said inner plate and cooperating therewith to form an elongated guideway for the protruding end portion of the driver element, a guard piece carried by said outer plate and substantially overlying the exterior of said outer plate and being slidably movable relative thereto between extended and retracted positions with respect to the underside of the housing, and resilient means adjustably carried on a fixed part of the tool and adapted to be manually manipulated between first and second positions and, when in the first position, having a portion thereof overlying the exterior of said guard piece, and resiliently engaging and retaining said outer plate in face-to-face relation with said inner plate, and, when in the second position, being disengaged from said outer plate whereby said guard piece and outer plate are disassembled relative to said inner plate.

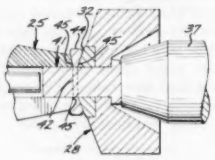


3,853,258

FLASH REMOVAL APPARATUS FOR A FRICTION WELDING OPERATION

Johan August Louw, Orange, and Robert Earle Ghiselin, Newport Beach, both of Calif., assignors to Textron, Inc., Santa Ana, Calif.

Filed July 17, 1972, Ser. No. 272,520
Int. Cl. B23k *27/00*
U.S. Cl. 228—2 **6 Claims**



1. In a friction welding apparatus for friction welding a first workpiece to a second workpiece to form a unitary structure: a first workpiece holder formed to receive a first workpiece; said first workpiece holder having a flash controlling surface and a shearing edge adjacent to said first workpiece;

means forming a shoulder on said first workpiece holder;

a holding member adapted to hold a portion of said first workpiece against said shoulder;

a second workpiece holder adapted to receive a second workpiece;

said second workpiece holder having a second flash controlling surface for cooperation with said first flash controlling surface to form a cavity for the flash resulting from said frictional welding operation;

and means including an ejection plunger for ejecting said unitary structure from said workpiece holders;

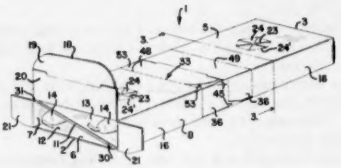
said ejection plunger being adapted to move said structure and said flash in such a direction as to cause said shearing edge to shear off said flash as said structure is ejected from said first workpiece holder.

3,853,259

DISPLAY AND STORAGE CONTAINER

Thomas J. Tupper, 2201 Grand Ave., Kansas City, Mo. 64108

Filed Feb. 4, 1974, Ser. No. 439,556
Int. Cl. B65d *1/36*
U.S. Cl. 229—15 **10 Claims**



1. A storage and display container comprising:

a. walls defining a hollow container;

b. first means on one of said walls for forming a plurality of spaced apart openings therethrough;

c. a partition in said container and having certain of said walls on opposite sides thereof and separating said container into a plurality of separate storage areas for separating objects stored in said container said partition having apertures therethrough spaced from and in axial alignment with a respective said opening formed by said first means; and

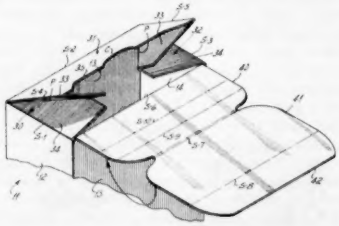
d. second means on certain of said walls for facilitating separating said container into a plurality of separate body members each having first means and respective aperture.

3,853,260

BELLOWS FOLD END CLOSURE

Charles M. Wood, 4976 Shirley Place, Cincinnati, Ohio

Filed Oct. 29, 1973, Ser. No. 410,780
Int. Cl. B65d *5/02, 5/10*
U.S. Cl. 229—37 R **13 Claims**



1. An improved bellows fold end closure for a folding box having two opposite side panels, a top panel and an opposite bottom panel, the improved closure comprising:

a bellows fold end panel hinged to ends of each side panel, a hinged end panel hinged to said bottom panel along one edge thereof and to respective bellows fold end panels on

other opposite edges thereof, said hinged end panel being folded inwardly toward said bellows fold end panels to form a bellows fold in conjunction therewith,

a tuck tab hinged to said top panel along one edge thereof, a first pull tab hingedly connected to an opposite edge of said tuck tab,

said tuck tab being insertable into said bellows fold between said hinged end panel and said bellows fold end panels to form said closure,

said first pull tab also being insertable into said bellows fold adjacent said tuck tab, and

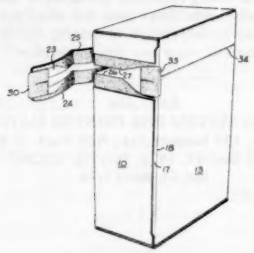
said first pull tab having an end, opposite its connection with said tuck tab, extending outwardly from said bellows fold and providing means for pulling said tuck tab out of said bellows fold when said closure is to be opened.

3,853,261

CARTON WITH EASY OPENING FEATURE AND BLANK THEREFOR

Norman H. Moore, Palo Alto, Calif., assignor to Fibreboard Corporation, San Francisco, Calif.

Filed Mar. 15, 1973, Ser. No. 341,330
Int. Cl. B65d *17/20, 5/74*
U.S. Cl. 229—51 AS **6 Claims**



1. A paperboard carton comprising a first side panel, a front panel, a second side panel and a back panel hingedly connected along parallel scorelines, a manufacturer's flap hinged along a scoreline to said back panel and sealed to said first side panel to form a tubular carton body, end closure flaps hinged to said panels and adapted to form end closures for said carton,

a tear strip formed across at least three of said panels, said tear strip having an end at which tear is initiated, said end lying at an edge of said first side panel and sealed to said manufacturer's flap therewith, and

limited depth transverse cuts formed in the area of said manufacturer's flap which underlies said end of said tear strip, said transverse cuts extending across said manufacturer's flap and beyond the scorelines joining said manufacturer's flap to said back panel, and a longitudinal limited depth cut in said back panel joining the ends of said transverse cuts,

said cuts forming tab means which protrude from the carton body when the carton is in erected condition, so that said tab means may be grasped and pulled to initiate removal of said tear strip.

3,853,262

QUICK OPENING ENVELOPE

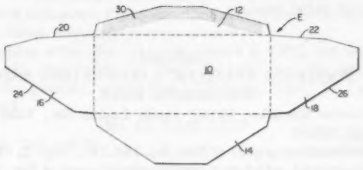
Carl L. Tucker; Robert M. Schaible, and Frank B. Cooper, all of Denver, Colo., assignors to Pak-Well Corporation, Denver, Colo.

Filed Feb. 23, 1973, Ser. No. 335,370
Int. Cl. B65d *27/36*
U.S. Cl. 229—80 **4 Claims**

1. A quick opening envelope which can be opened easily so that all of the contents thereof are visible, said envelope comprising:

a front panel having upper, lower and side edges and a center line intermediate of and parallel to said side edges; a pair of side flaps folded inwardly, respectively, front each of said side edges, each of said side flaps having an upper edge adjacent said upper edge of said front panel and a lower edge extending angularly from adjacent said lower edge of said front panel to a point along the center line of said front panel and spaced from the lower edge thereof, the lower edge of said respective side flaps forming a configuration to permit viewing of the contents of the envelope;

an upper sealing flap folded down along the upper edge of said front panel and overlying a portion of said side flaps and having adhesive means at least extending across said



center line for permanently sealing said upper flap to said side flaps;

a bottom flap folded upwardly along said lower edge of said front panel and having edges which overlie said lower edges of said side flaps and having a top edge lying in the same plane as the remainder of said bottom flap which is spaced from said upper flap, said top edge being unattached to said side flaps; and

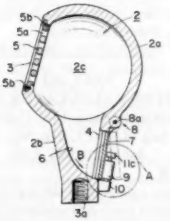
adhesive spots spaced along said lower edges of said flaps attaching said edges of said bottom flap to said lower edges of said side flaps, said top edge of said bottom flap being free from said side flaps so that said envelope can be opened quickly by inserting a finger between said upper edge of said bottom flap and said side flaps to grasp said bottom flap and tearing said bottom flap away from said side flaps at said adhesive spots to expose the contents of said envelope for removal thereof.

3,853,263

CIGARETTE BUTT RECEPTACLE

Jiro Otsuka, 1323-247 Hisagi, Zushi, Japan

Filed Aug. 8, 1973, Ser. No. 386,743
Int. Cl. B65d *91/00*
U.S. Cl. 232—43.1 **5 Claims**



1. In a cigarette butt receptacle comprising a stand, a main body supported by said stand and including a hollow spherical upper portion and a hollow lower portion integrally connected to said upper portion and internally communicating with the interior of said upper portion, means forming in said upper portion an inlet opening for receiving cigarette butts and the like to be retained in said main body, means forming in said

lower portion an outlet opening for removing the cigarette butts therethrough from within said main body, and a door normally closing said outlet opening:

the improvement wherein said lower portion comprises a downwardly converging conical body with a wall inclining inwardly in the downward direction, hinge means pivotally supporting said door around a horizontal hinge axis along the upper edge of said outlet opening and in a suspended manner allowing the door to be hung under gravity in a vertical attitude, when the door is opened, with the lower end of the door spaced apart horizontally from the lower edge of said outlet opening, latching means for holding said door in closed position in which the door forms part of the conical wall of said lower portion and means forming a bottom surface of said lower portion, downwardly sloping toward the lower edge of said outlet opening.

3,853,264

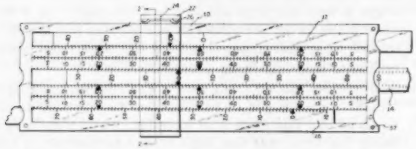
FOOTBALL STATISTIC CALCULATING AND RECORDING RULE

J. Warren Hovorka, 10102 Verde Lomar Dr., Villa Park, Calif. 92667

Continuation-in-part of Ser. No. 168,291, Aug. 2, 1971, abandoned, which is a continuation-in-part of Ser. No. 854,458, Sept. 2, 1969, abandoned. This application Mar. 29, 1973, Ser. No. 346,035

Int. Cl. G06g *1/02*

U.S. Cl. 235—70 A **14 Claims**



1. A calculating device of the slide rule type useful for calculating and recording statistics during a football game, the combination comprising: a body, a graduated grid on said body corresponding to the yardlines of a football field, first, second and third parallel slides carried by and freely extendible to either side of said body, a yards to go scale for a first down along a portion of the first slide bearing a zero index with yardline calibration marks in arithmetric progression therefrom, a first down line index at the tenth yardline calibration from the zero index; a yards gained or lost scale on the second slide bearing a line of play index intermediate the length of said slide with yardline calibration marks in arithmetric progression extending to either side thereof; a yards returned scale on the third slide bearing a change in possession index and yardline calibration marks in arithmetric progression extending therefrom.

3,853,265

NOMOGRAM TYPE CALCULATOR SLIDABLE RULE

Heinz Kunert, Belvederestrasse 155, Cologne, Germany

Filed Aug. 8, 1973, Ser. No. 386,501

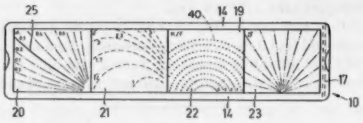
Int. Cl. G06c *3/00*

U.S. Cl. 235—89 R **4 Claims**

1. In a nomogram calculating device of the type wherein a stylus point is pressed onto a transparent sheet and the pressure of the stylus point is transmitted through the transparent sheet onto a tacky, waxy surface layer of paraffin touching and immediately below said sheet to thereby form an image on the paraffin of the path taken by the stylus point, and wherein the image may be removed from the waxy surface layer by separation of said transparent sheet from said waxy surface layer, for the formation of subsequent images on different as well as the same areas of the waxy paraffin layer, the improvement comprising,

a. a plurality of spaced data fields carried by a frame and stored on a plate above, parallel, and contiguous to said transparent sheet,

b. means for mounting said waxy paraffin layer and said transparent sheet in said frame for sliding movement relative to said data fields, so that at least one zone of said paraffin layer is capable of being sequentially superposed beneath and with respect to each of said data fields,



c. whereby a tracing on the waxy paraffin layer corresponding to the tracing of one data field may be superposed with respect to another data field,

d. an erasing bar positioned between the transparent sheet and the waxy paraffin layer, said erasing bar carried by and mounted on said frame, the erasing bar and the waxy paraffin layer being relatively movable, to thereby separate the transparent sheet from the waxy paraffin layer upon relative movement of the erasing bar and paraffin layer and thereby erase any images thereon.

3,853,266

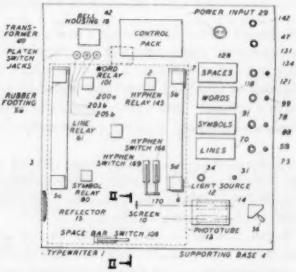
COUNTING SYSTEM FOR PRINTED MATERIAL

Harold Chaskin, 131 Bennett Ave., New York, N.Y.

Filed Dec. 19, 1973, Ser. No. 426,357

Int. Cl. B41j *9/24*

U.S. Cl. 235—102 **12 Claims**



1. A counting system for determining the quantity of printed material produced by a printing machine having a plurality of keys for printing characters, a spacer bar for providing spaces between words, a platen and a hyphen key, said counting system comprising

a primary source of electrical power;

a secondary source of electrical power;

a symbol meter for registering symbols printed by the keys;

a symbol meter control circuit comprising an energizing circuit for the symbol meter and control means including photoelectric means controlled by the keys for printing characters for controlling the operation of the symbol meter energizing circuit, the energizing circuit of the symbol meter control circuit comprising an input relay connected to the secondary source of power and including relay armatures and contacts controlled thereby and a symbol relay having relay armatures and contacts controlled thereby, the symbol relay being connected to the primary source of power via a relay armature and contact of the input relay and the symbol meter being connected

to the primamry source of power via a relay armature and contact of the symbol relay;

a word meter for registering words formed by symbols printed by the keys;

a word meter control circuit comprising an energizing circuit for the word meter and control means including photoelectric means controlled by the keys for controlling the operation of the word meter energizing circuit;

a line meter for registering the lines of words printed by the keys;

a line meter control circuit comprising an energizing circuit for the line meter and control means including a starting switch and means controlled by the starting switch at the start of a line only and controlled by the platen after the start of a line for controlling the operation of the line meter energizing circuit;

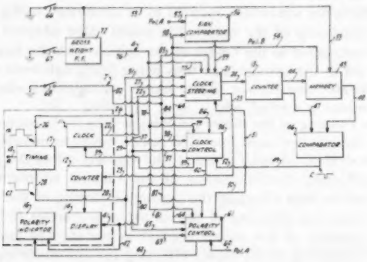
a space meter for registering the spaces between the words printed by the keys; and

a space meter control circuit comprising an energizing circuit for the space meter.

3,853,267
DIGITAL SUBTRACTION SYSTEM AND METHOD FOR DETERMINING NET WEIGHT

Robert M. Cadwell, San Jose, and Frank C. Rock, Santa Rosa, both of Calif., assignors to National Controls, Inc., Santa Rosa, Calif., by said Rock

Filed Feb. 1, 1974, Ser. No. 438,936
Int. Cl. G06f *15/20, 7/50*
U.S. Cl. 235—151.33 **9 Claims**



1. In apparatus for determining the net weight of a load on a scale from signals representing gross weight and tare weight:

A. first and second digital counters;

B. a source of clock pulses;

C. means for providing a timing signal defining a counting period having a duration corresponding to the gross weight signal;

D. means for comparing the signs of the gross weight and tare weight signals;

E. means for storing the sign of the tare weight signal at the outset of the counting period;

F. means for

1. applying the clock pulses initially to the first counter if the signs compared are the same,

a. if the count in the first counter reaches a level corresponding to the tare signal prior to the end of the counting period, applying the clock pulses to the second counter for the remainder of the counting period,

b. if the count in the first counter does not reach the level corresponding to the tare signal by the end of the counting period, changing the polarity of the stored sign and applying the clock pulses to the first and second counters until the count in the first counter reaches the level corresponding to the tare signal;

2. applying the clock pulses initially to the second counter from the outset of the counting period to the end of the counting period if the signs compared are different,

a. changing the polarity of the stored sign at the end of the counting period, and

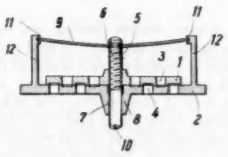
b. thereafter applying the clock pulses to the first and second counters until the count in the first counter reaches the level corresponding to the tare signal; and

G. means for displaying the stored sign and the final count in the second counter to indicate the net weight of the load.

3,853,268
TEMPERATURE RESPONSIVE VALVES

Friedrich Schneider, Pforzheim, Germany, assignor to G. Rau, Pforzheim, Germany

Division of Ser. No. 231,146, March 2, 1972, Pat. No. 3,799,432. This application Sept. 10, 1973, Ser. No. 395,453
Claims priority, application Germany, Mar. 11, 1971, 2111667
Int. Cl. G05d *23/10*
U.S. Cl. 236—48 R **3 Claims**



1. A temperature responsive valve for the regulation of the coolant flow in an internal combustion engine comprising a valve part movable between an open position to allow passage of the coolant through the valve and a closed position to prevent passage of the coolant through the valve, and a plate-like bimetal snap-action element responsive to the temperature of the coolant to effect the opening and closing movement of the valve part, said bimetal element being rigidly supported at its periphery and being substantially uniformly domed or dished, and said movable valve part and a fixed valve part associated with an associated valve casing forming a ring valve in which openings are provided in the movable valve part and the fixed valve part, the opening in the movable valve part being offset with respect to the openings provided in the fixed valve part.

3,853,269
TEMPERATURE ACTUATED VALVE

Walter P. Graber, Cadillac, Mich., assignor to Kysor Industrial Corporation, Cadillac, Mich.

Filed Nov. 8, 1973, Ser. No. 414,111
Int. Cl. G05d *23/02*
U.S. Cl. 236—86 **12 Claims**

1. A temperature responsive valve coupled between a supply and an actuatable element for selectively coupling said element to said supply and venting the actuatable element in response to temperature variations, said valve including:

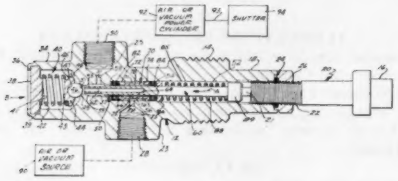
a body including a passageway extending within said body and inlet and outlet ports extending outwardly from said passageway;

an exhaust port formed in said body;

a ball valve coupling said exhaust port to said passageway;

a thermally responsive element extending into and secured within said passageway remote from said ball valve, said thermally responsive element including a pin movable in response to temperature changes;

a movable rod valve slidably fitted in said passageway and extending from said pin toward said ball valve and including an axially extending aperture formed therein and extending from an open end thereof facing said ball valve, said rod valve including a radial port communicating with said axially extending aperture, said rod valve movable in response to movement of said pin to engage said ball valve to seal said open end when a first predetermined temperature is sensed by said thermally responsive element and open said ball valve to couple said exhaust port to said passageway when a second predetermined temperature is sensed;



spool-shaped spacer means having an inner diameter greater than the outer diameter of said rod valve and an outer diameter at its mid-portion less than the inner diameter of said passageway and including a port formed through the wall of said spacer, said spacer positioned within said body to surround said rod valve; and

means at opposite ends of said spacer means for sealing said spacer and rod valve to define an inner chamber between said rod valve and said spacer communicating with said radial port of said rod valve throughout the range of motion of said rod valve and an outer chamber between said spacer and said body and communicating with one of said inlet or outlet ports.

3,853,270

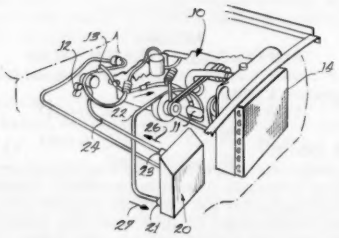
MOTOR RAPID WARMING DEVICE

Stanley Prebil, 2800 Gabriel Ave., Zion, Ill. 60099

Filed July 30, 1973, Ser. No. 383,724

Int. Cl. B60h *1/04*

U.S. Cl. 237—12.3 B **1 Claim**



1. Motor rapid warming device for use in vehicles having a motor, a vacuum source operable when the motor is running, a coolant pump operably driven by the motor, a coolant heated heater for supplying heat to the vehicle passenger compartment, coolant passages throughout the motor block of the motor for cooling the same, a fluid cooling system interconnecting the passageways in the motor block to the coolant pump and heater for delivering motor coolant to the heater and motor, the motor rapid warming device comprising:

a unitarily formed thermally insulated coolant storage tank for holding a supply of hot motor coolant therein and for maintaining the coolant therein at a relatively high temperature for an extended period of time when the motor is not running, the storage tank having a volume at least equal in capacity to the capacity of the coolant system of the motor;

the storage tank having a flat front vertical wall, a flat bottom horizontal wall, a pair of opposed parallel spaced apart flat vertical side walls, a flat back wall affixed along its bottom edge to the bottom wall and tapering upward and outwardly therefrom at an angle thereto and terminating at a position less than the vertical height of the front wall and spaced rearwardly therefrom, and a flat top wall extending from a top edge of the front wall in a downward slanted manner therefrom to be joined to the back wall;

a coolant containing chamber defined interiorly of the tank walls for holding the motor coolant therein;

an outlet port formed in the top portion of the front wall of the tank in communication with the interior chamber thereof;

an inlet port formed in the bottom portion of the front wall in communication with the chamber interiorly thereof;

a vacuum operated inlet valve connected to the inlet port;

a vacuum operated outlet valve connected to the outlet port;

suitable lengths of tubing connecting the storage tank in fluid series communication with the motor cooling system, the inlet valve adapted to be connected to the coolant pump of the motor, the outlet valve adapted to be connected to the heater of the vehicle with the hot coolant in the storage tank thus being firstly delivered to the heater and thence to the motor passageways when the motor is started; and

the running of the motor applying a vacuum to each of the vacuum operated inlet and outlet valves to maintain the valves in an open position, the shutting-off of the motor effecting discontinuance of the vacuum source to the valves thus effecting the automatic closing of the valves upon the stopping of the motor in a manner to trap a quantity of hot motor coolant in the storage tank, the re-starting of the motor effecting the automatic opening of the vacuum valves to provide the hot motor coolant from the storage tank to the heater and motor block passageways promptly upon the starting of the motor so as to provide heat to the passenger compartment of the vehicle along with assisting in raising the operating temperature of motor lubricants to desired temperatures for proper functioning and lubrication thereby.

3,853,271

FLUID DISCHARGE SYSTEM

Kenneth D. Freshour, Norman, Okla., and John C. Van Dyk, deceased, late of Oklahoma City, Okla. (by Liberty National Bank & Trust Co., trustee), assignors to Woods Research & Development Corp., Oklahoma City, Okla.

Division of Ser. No. 113,608, Feb. 8, 1971, Pat. No. 3,724,762, which is a continuation of Ser. No. 814,716, Oct. 23, 1970, abandoned. This application Oct. 2, 1972, Ser. No. 293,775

Int. Cl. B05b *17/04*

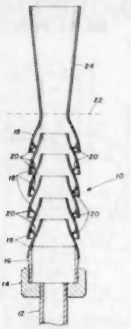
U.S. Cl. 239—8 **10 Claims**

1. A liquid-gas contacting process comprising:

forcing a stream of liquid of predetermined cross-section through a series of convergent sections each open to a predetermined gaseous atmosphere and convergent sections having convergent ends equal in cross-section thereby entraining the gas in the liquid stream, and

spraying the liquid and the gas entrained therein out of the

last convergent section in the series into the same predetermined atmosphere whereby the liquid and the gas will



free-fall to reduce separation due to gravity and thus tend to increase the time of liquid-gas contact.

3,853,272

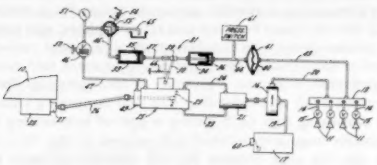
VEHICLE-MOUNTED SPRAY APPARATUS

Jackson Decker, Oregon, and Harding M. Russell, Rockford, both of Ill., assignors to E. D. Etnyre & Co., Oregon, Ill.

Filed Sept. 27, 1973, Ser. No. 401,425

Int. Cl. B05b *9/06*

U.S. Cl. 239—155 **3 Claims**



1. Apparatus comprising a hydraulic pump, a variable speed input drive connected to said pump, control means associated with said pump and adjustable to different positions, the delivery rate of said pump changing when the speed of said input drive changes and said control means are in a fixed position and also changing when the speed of said input drive is constant and said control means are adjusted in first and second directions, a hydraulic motor connected to be driven by the delivery of said pump, a second pump connected to be driven by said motor and operable when driven to discharge liquid under pressure, and a series of spray nozzles connected to receive the liquid discharged from said second pump and adapted to be selectively opened or closed, the discharge pressure of said second pump changing when the delivery rate of said hydraulic pump changes and a certain number of said nozzles are open and also changing when the delivery rate of said hydraulic pump is constant and a different number of nozzles are open, the improvement in said apparatus comprising, a reversible fluid-operated actuator connected to adjust said control mmeans, a source of pressure fluid at constant pressure and acting on said actuator to bias said control means in said first direction, the discharge pressure of said second pump acting on said actuator to bias said control means in said second direction whereby said control means seek a position in which said actuator is balanced by said constant pressure and said discharge pressure and in which the discharge pressure is at a substantially constant magnitude determined by the magnitude of said constant pressure, and means selectively operable to adjust the magnitude of said constant pressure.

3,853,273

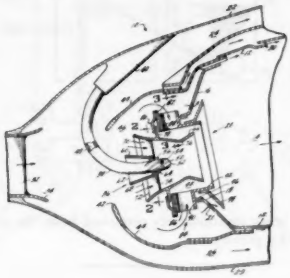
AXIAL SWIRLER CENTRAL INJECTION CARBURETOR

Donald W. Bahr; Jack R. Taylor, and Paul E. Sabla, all of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Oct. 1, 1973, Ser. No. 402,041

Int. Cl. B05b *7/00*; **F02c** *3/00*

U.S. Cl. 239—402 **9 Claims**



1. A fuel carbureting device for a gas turbine engine comprising:

a support cup having an inlet and an outlet;

a venturi shroud surrounding said support cup and cooperating therewith to define an annular flow path therebetween, said shroud having an upstream end, a downstream end, and a throat section located therebetween;

a plurality of axial swirl vanes positioned between said support cup and said venturi shroud and adapted to swirl air flowing through said flow path in a first direction;

a fuel tube having a first end adapted to receive fuel and a second end positioned within said support cup, a fuel passage extending from said first end to said second end, a plurality of fuel injection holes located near said second end adapted to deliver fuel to the swirled air flow from said axial vanes; and

means for generating a counterswirl flow of air at the downstream end of said venturi shroud.

3,853,274

IMPACT CRUSHER

Harold Wright, Stockton, and Keith Thomas Jones, Normanby, both of England, assignors to The British Iron and Steel Research Association, London, England

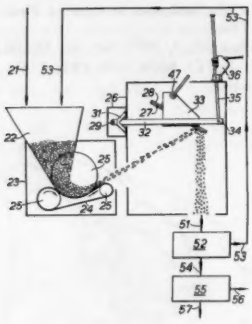
Continuation of Ser. No. 146,062, May 24, 1971, abandoned. This application Apr. 18, 1973, Ser. No. 352,207

Int. Cl. B02c *19/00*

U.S. Cl. 241—40 **4 Claims**

1. Apparatus for fragmenting pieces of inelastic brittle, fragmentable material into smaller pieces of a desired size comprising: a conveyor belt adapted for throwing a continuous jet of pieces of said fragmentable material; means for continuously feeding pieces of said fragmentable material onto said conveyor belt; a stationary target plate inclined to the direction of the jet and spaced in a generally horizontal direction from the closest end of the conveyor belt, means for changing the angle of inclination of the target plate with respect to the direction of the jet of pieces of fragmentable material; means for adjusting the orientation of the target plate with respect to the jet of said pieces; and means for driving said conveyor belt at a speed required to maintain a speed at the surface of the conveyor belt of between 20 and 100 feet per second, the arrangement being such that all of the pieces to be fragmented are thrown from the conveyor belt and against said target plate as a continuous jet at a speed of

between 20 and 100 feet per second and are fragmented solely by the impact of the particles on the target plate, the pieces



of material being continuously removed from the area of the target plate by gravity.

3,853,275

FILM THREADING DEVICE FOR A MOTION PICTURE PROJECTOR

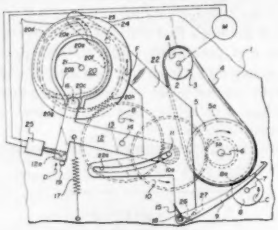
Heinz Peschel, Stgt. Zuffenhausen, and Manfred Radtke, Korb, both of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 15, 1973, Ser. No. 341,435

Claims priority, application Germany, July 26, 1972, 2231130

Int. Cl. G03b *1/58*

U.S. Cl. 242—195 **4 Claims**



1. In an apparatus having supporting means and advancing means for receiving and advancing an elongate strip material having an opening in the leading end thereof, said apparatus having threading means which includes a hook member movably supported by said apparatus and having drive means for moving said hook member between, (1) a withdrawn position wherein said hook member is remote from said strip, (2) an engaging position wherein said hook member is closely adjacent to said opening in said leading end of a received strip to engage said leading end through said opening, and (3) a threading position wherein said hook member releases said leading end to said advancing means, the improvement comprising:

a. a cam rotatably supported by said apparatus;

b. switch means movable between, (1) a first condition wherein said switch means is effective to cause said drive means to move said hook member, and (2) a second condition wherein said switch means is ineffective to cause said drive means to move said hook member; and

c. means connecting said cam and said switch means to cause said switch means to be moved between said second condition, and said first condition and to hold said switch means in said first condition at least during one revolution of said cam.

3,853,276

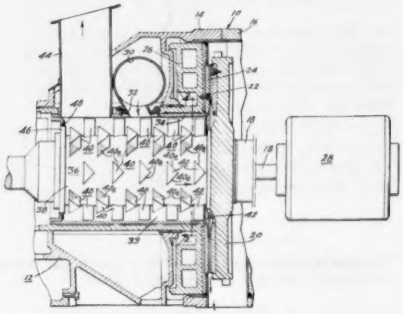
REVERSIBLE REFINER FEEDER

Chester Donald Fisher, Muncy, Pa., assignor to Sprout, Waldron & Company, Inc., Muncy, Pa.

Filed Oct. 11, 1972, Ser. No. 296,564

Int. Cl. B02c *23/02*

U.S. Cl. 241—247 **14 Claims**



1. In a disc type refiner for high consistency stock comprising a frame, a refiner shaft rotatably supported on said frame, a rotor mounted on said shaft for rotation therewith, a nonrotating head mounted on said frame, and refining plates mounted in juxtaposed relation on said rotor and said nonrotating head to produce a refining action on stock introduced therebetween upon rotation of said drive shaft, the improvement comprising reversible conveyor means for introducing stock into the space between said refining plates, said conveying means comprising a substantially cylindrical conveying chamber surrounding said drive shaft adjacent said rotor in coaxial relation thereto, a plurality of conveying lugs fixed to said drive shaft and extending into said conveying chamber, said conveying lugs each having a pair of intersecting faces oppositely angularly inclined with respect to the drive shaft axis, the lug edge formed by said intersecting faces being directed toward said rotor, and conduit means for introducing stock into said conveying chamber, said lugs upon rotation of said drive shaft serving to advance stock introduced into said conveying chamber toward said rotor for passage between said plates regardless of the direction of the shaft rotation.

3,853,277

SCAFFOLD AND WINDING APPARATUS

Billy Ross Bush, West Babylon, N.Y., assignor to The Preload Company, Inc., Garden City, N.Y.

Filed Nov. 14, 1972, Ser. No. 306,201

Int. Cl. B21f *17/00*

U.S. Cl. 242—7.21 **2 Claims**

1. An apparatus for wrapping prestressing steel wire around the outer surface of a concrete tank having a continuous vertical wall including the elements of:

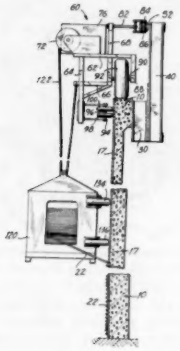
a. a plurality of vertical steel bracing beams attached to the upper part of the inside surface of said concrete wall and extending above said wall, said beams having an I beam guide rail attached to the outer faces thereof and positioned essentially parallel to the course of said wall;

b. a steel scaffold comprised of frame members, movable along the top of said wall and including

1. steel rollers, attached to a said frame member, movable retained on the flanges of said I beam guide rail,

2. a rubber wheel, vertically mounted on an axle mounting in said scaffold, positioned to roll along the top of said wall and including a motor to drive said wheel and scaffold along the top of said wall,

3. a second wheel mounted horizontally in an axle mounting in said scaffold positioned to roll along the upper outer surface of said wall, and
4. a support platform having a winch thereupon for raising and lowering an apparatus for winding prestressing wire, under tension, around said walls; and



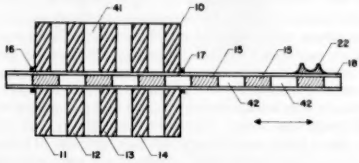
c. an apparatus for winding prestressing wire, under tension, around said wall, said apparatus being supported from said support platform by a cable associated with said winch.

3,853,278

YARN GUIDE DRIVING DEVICE

Endre L. Berecz, 1701 S.W. 22nd Ave., Fort Lauderdale, Fla. 33315, and Peter B. Schweitzer, 8957 S.W. 52nd Pl., Cooper City, Fla. 33314

Filed Aug. 10, 1972, Ser. No. 279,303
Int. Cl. B65h *54/28*
U.S. Cl. 242—43 **2 Claims**



1. A yarn guide driving mechanism for positioning a yarn guide relative to a yarn takeup reel comprising:

linearly actuating magnetic yarn guide motor, said yarn guide motor including a plurality of magnetic disks parallely disposed adjacent each other forming a cylinder, each disk having a central aperture; a shaft partially disposed and moveable within said disk apertures, said shaft having a plurality of separated magnetic segments disposed along its length in a pole-to-pole relationship; and inductive circuit means coupled to each magnetic disk, for energizing each disk individually;

yarn guide rigidly connected to said shaft moveable back and forth along a straight line path by said motor;

signal means coupled to said yarn takeup reel for sensing and generating a signal representing the diameter of said yarn on said takeup reel;

power source;

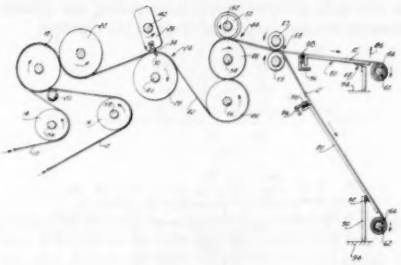
motor control means connected to said motor, said power source and said yarn takeup reel diameter signal generating means for energizing said motor for driving said yarn guide to particular positions relative to said takeup reel in synchronization with said yarn takeup diameter whereby said yarn guide is positionable by said motor to any point along a linear path adjacent said takeup reel.

3,853,279

METHOD AND APPARATUS FOR FORMING LIGHTWEIGHT WEB MATERIAL INTO A CORELESS ROLL

David E. Gerstein, 63-33 98th Pl., Forest Hills, N.Y. 11374

Continuation-in-part of Ser. No. 211,319, Dec. 23, 1971. This application Feb. 22, 1973, Ser. No. 334,844
Int. Cl. B65h *35/02*
U.S. Cl. 242—56.2 **13 Claims**



1. An apparatus for forming coreless rolls of tissue sheets connected in end to end relationship along a frangible tear line comprising: means for supporting a plurality of supply rolls of continuous web of tissue material, means for guiding each of said webs through a feed path, means for directing each of said webs into overlying juxtaposition relationship through a portion of said feed paths, perforating means and slitting means disposed adjacent the portion of said feed path through which said webs are fed in juxtaposition relationship, said perforating means engaging said juxtapositioned web to simultaneously perforate said juxtapositioned webs transversely thereof along longitudinally spaced intervals, and said slitting means engaging said juxtapositioned webs to simultaneously slit said webs into a plurality of longitudinal lengths, means disposed in said feed path to effect separation of said juxtapositioned webs subsequent to said webs being perforated and slit, a mandril rotatably journalled for receiving the slit lengths of the respective webs, means for securing the respective slit lengths to said mandril, means for effecting the rotation of said mandrils for winding said slit lengths into distinct coreless rolls on said mandril, and clamping means to secure said slit lengths of the respective webs adjacent said mandril to facilitate the severance of said coreless rolls from the remaining respective continuous web.

3,853,280

TAPE WINDING MANDREL AND APPARATUS

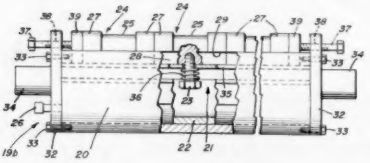
Joseph V. Pennisi, North Greenbush, and Arthur W. Connery, Green Island, both of N.Y., assignors to Nashua Corporation, Nashua, N.H.

Filed Oct. 1, 1971, Ser. No. 185,730
Int. Cl. B65h *19/04*
U.S. Cl. 242—56.9 **10 Claims**

1. Mandrel of generally cylindrical shape for the simultaneous winding of a plurality of rolls of strip material onto individual cores spaced axially along the mandrel whereby the tension in each roll is maintained substantially uniform, said mandrel comprising:

a. an elongated tubular shaped body member being in cross-section in the shape of an incomplete circle formed by an arc, a compartment located inwardly hereof, and a support surface at each end of the arc along the length of the body member and integral therewith;

b. a plurality of core engaging members located axially along and in operative engagement with said body member, each said core engaging member having a base surface of planar shape and an arcuate shaped core engaging surface, and having bearing surfaces interconnecting said base surface and said arcuate shaped core engaging surface, each said core engaging member being individually mounted for movement radially outwardly from and into retractable engagement with said body member, said core engaging members on said outward movement each engaging the inner peripheral surface of an associated core whereby each core is frictionally gripped by the core engaging member with some desired force; the bearing surfaces on each said core engaging member in its retracted location contacting the opposed support surface on the body member thereby completing the circular cross-section and cylindrical shape of the mandrel;



c. an elongated planar shaped member located in the inwardly located compartment of said body member and connected to said body member, said elongated member being associated with each said core engaging member and providing a support for the base surfaces thereof;

d. means associated with the said elongated member and with the base surface of the core engaging members providing a positive force for retraction of each said core engaging member and whereby each said core engaging member will retract and the base surface thereof will be supported on said elongated member; and

e. means located within said mandrel body member and in said compartment associated with said first named means for exerting an outward force on each said core engaging member.

3,853,281

VACUUM TAPE REEL

Robert Ralph Elliott, Santa Ana, Calif., assignor to Century Data Systems, Inc., Anaheim, Calif.

Filed Oct. 19, 1972, Ser. No. 299,035

Int. Cl. B65h *75/28*

U.S. Cl. 242—74 **2 Claims**

1.

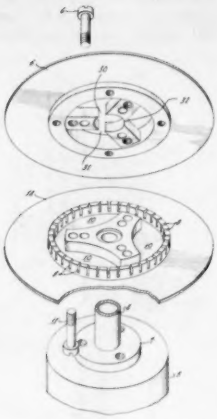
a vacuum take up reel system comprising:

a motor having a hollow output power shaft;

means for sealing the rear bearing of said motor output shaft to produce an airtight seal between said motor and output shaft;

means for connecting a source of pressure different than atmospheric pressure to the rear of said motor so as to communicate with the hollow shaft, said means for connecting the source of pressure comprising:

a resilient washer having a hole larger than the outside diameter of said hollow shaft, said washer to be positioned to have its hole axially aligned with said hollow



shaft;

a hollow elbow shaped tube member;

means for securing one opening of said elbow shaped tube member against the surface of said washer.

3,853,282

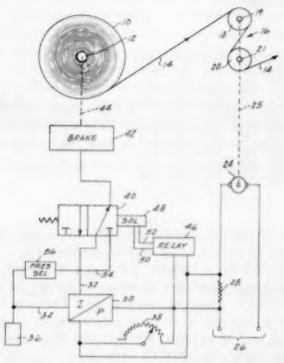
TENSIONING DEVICE

William P. Wentworth, Rockford, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Dec. 6, 1972, Ser. No. 312,506

Int. Cl. B65h *25/22, 23/10*

U.S. Cl. 242—75.44 **10 Claims**



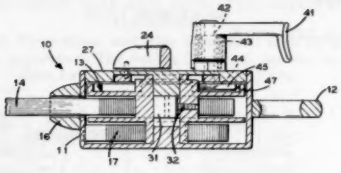
1. A tensioning device for use with a process employing a quantity of web material drawn from a supply roll comprising, in combination, a roller mounted on a shaft, said web contacting the surface of said roller between said supply roll and said processing apparatus, a motor connected to said shaft, means for sensing the armature current of said motor and for regulating the pneumatic pressure on an output line in response thereto, brake means connected with said output line and adapted for impeding the rotating of said supply roll to control the tension on said web, and a source of potential connected to the motor to urge said motor to rotate in a direction opposite to the direction of travel of the web.

3,853,283

RETRACTABLE LEASH DEVICE

Joseph Croce, 742 Deer Park Ave., Babylon, N.Y. 11703, and Kurt Bayer, 6708 182nd St., Flushing, N.Y. 11365

Filed June 4, 1973, Ser. No. 366,776
Int. Cl. B65h 75/48
U.S. Cl. 242—107.4 6 Claims



1. A retractable leash device which comprises a housing; a reel supported by said housing for rotation relative thereto and disposed to receive a leash which is paid out when the reel rotates in one direction and which is retracted when the reel rotates in the opposite direction; means defining a toothed wheel connected to said reel for rotation therewith; a pair of pawls mounted on said housing and moveable relative thereto into respective positions of engagement with said toothed wheel to control the rotation of said wheel and reel; an annular cam having multiple camming surfaces and supported by said housing for limited rotary movement relative thereto; means resiliently biasing said pawls into engagement with said cam; said cam having a first set of camming surfaces which when in engagement with said pawls positions both pawls into locking engagement with the toothed wheel to lock the wheel and reel for both directions of rotation such that the leash can be neither paid out or retracted, said cam having a second set of camming surfaces which when in engagement with said pawls positions both pawls out of engagement with the toothed wheel to allow the wheel and reel to rotate in either direction such that the leash can be freely paid out and retracted upon slackening, said cam having a third set of camming surfaces which when in engagement with said pawls positions one pawl into engagement with the toothed wheel to lock the wheel and reel against rotation in the direction corresponding to leash payout such that the leash can be freely retracted upon slackening but is locked against further payout; means operable to rotatably move said cam to selectively position any one of said first, second and third sets of camming surfaces into engagement with said pawls; and drive means connected to said reel and operable to urge same in the direction for retracting the leash.

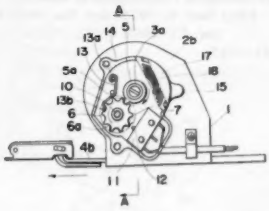
3,853,284

PASSENGER VEHICLE SAFETY BELT WINDING DEVICE WITH MEANS FOR DETECTING THE PULLED-OUT LENGTH OF A BELT

Tsukio Hasegawa, and Masahiro Iwatsuki, both of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishikasugai-gun, Aichi-ken, Japan

Filed July 14, 1972, Ser. No. 271,792
Claims priority, application Japan, July 17, 1971, 46-63015
Int. Cl. B65h 75/38
U.S. Cl. 242—107.4 6 Claims

1. A passenger vehicle safety belt winding device comprising a frame, a shaft rotatably mounted on the frame and fixedly securing one end of a belt adapted to be wound thereon, a spring constantly urging the shaft in one direction of rotation to wind the belt onto the shaft, and means for detecting the pulled-out length of the belt, the detecting means including a kick gear rigidly mounted on the shaft and having a single transfer tooth at the periphery thereof, a pinion gear rotatably mounted on the frame and having at least the number of teeth corresponding to the number of rotations of the shaft required to pull out the full length of the belt from the shaft, the pinion gear being positioned to engage the transfer tooth of the kick gear once during each revolution of the kick gear for rotation one tooth position by the kick gear such that the rotational position of the pinion gear corresponds to the number of revolutions of the shaft, means for permitting rotation of the pinion gear upon engagement and rotation thereof by the kick gear and for maintaining the pinion gear in a stationary condition when the pinion gear is out of engagement with the kick gear, a cam rigidly mounted on the



pinion gear and having large and small diameter portions, the large diameter portion having a circumferential length corresponding to a predetermined number of teeth of the pinion gear, and a switch having a push button positioned for engagement with the large diameter portion of the cam for controlling the operation of a warning means connected with the switch, the large diameter portion of the cam engaging the push button when a predetermined number of revolutions of the shaft corresponding to a predetermined pulled-out length of the belt has been attained.

3,853,285

RETRACTABLE CABLE DEVICE

Horace Leo Woodring, 2419 W. Oklahoma Pl., Tulsa, Okla. 74127

Filed Mar. 3, 1973, Ser. No. 346,446
Int. Cl. B65h 75/48
U.S. Cl. 242—107.11 4 Claims

1. A retractable cable device comprising:

a cable container having two cable exits on opposite sides of the container,

a spool for a cable mounted in said container,

a cable looped around a clip attached to said spool in a manner that said cable is doubly wound upon itself around said spool with each of the two ends of the cable exiting from the container through a separate one of the exits,

spring means mounted within the container biasing the spool to a wound condition of the cable, and

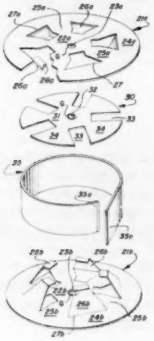
stop means to operate cooperatively with the spool to hold the spool selectively at any chosen position between a fully wound condition of the cable and an unwound condition of the cable.

3,853,286

REEL CONSTRUCTION

Samuel Lewis Beder, Bronx, N.Y.; Alexander Toth, Clifton, and Warren Richard Persak, Fair Lawn, both of N.J., assignors to Packaging Corporation of America, Evanston, Ill.

Filed Nov. 6, 1972, Ser. No. 304,131
Int. Cl. B65h 75/22, 75/14
U.S. Cl. 242—115 3 Claims



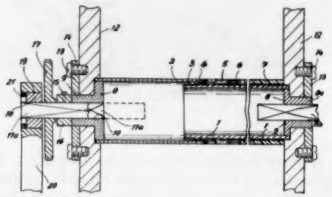
1. A collapsible reel assembly comprising a pair of blanks interconnected to one another and arranged in substantially superposed relation, an intermediate member interposed said blanks, and a web of material removably disposed between said blanks and encompassing said intermediate member when said assembly is in a non-collapsed state; each blank including a hub portion, a rim portion spaced from and encompassing said hub portion, a plurality of annularly spaced first struts interconnecting said hub and rim portions, said first struts and said hub and rim portions of a blank defining an end wall of the reel assembly, and a plurality of annularly spaced second struts disposed intermediate said first struts and separated therefrom, each second strut being one end thereof foldably connected to a portion of the blank defining the end wall, and a second end thereof foldably connected to the second end of a corresponding second strut of the other blank of the assembly, corresponding second struts, when in a first position of adjustment, being in substantial endwise relation and forming a core section disposed intermediate said end walls and aligned with the hub portions thereof whereby said end walls are in substantially spaced, parallel relation and said assembly is in a non-collapsed state, and when in a second position of adjustment and said web has been removed from between said blanks, said second struts being disposed in proximate substantially parallel relation whereby said end walls and said intermediate member are in proximate substantially parallel relation and said reel assembly is in a collapsed state; and intermediate member including a central portion aligned with the hub portions of said blanks, and peripheral portions projecting from the central portion and extending between the adjacent second struts of said blanks, the outer periphery of said intermediate member supportingly engaging the encompassing web of material when said second struts are in said first position of adjustment and said reel assembly is in a non-collapsed state.

3,853,287

WARP BEAM SECTION FOR A LOOM

Gottfried Scholze, Bergstr. 15; Dietrich Scholze, Blumenstr. 8, and Johannes Maier, Bergstrasse 17, all of 3559 Schreufa, Germany

Continuation of Ser. No. 182,816, Sept. 22, 1971, abandoned. This application Apr. 20, 1973, Ser. No. 352,940
Claims priority, application Germany, Sept. 24, 1970, 2046995
Int. Cl. B65h 75/14
U.S. Cl. 242—118.5 1 Claim



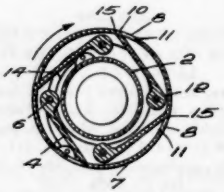
1. A warp beam section for a loom, comprising two telescoping barrels combined to form the beam section, each of the barrels having an inner end and an outer end, the inner end of one of the barrels extending into the inner end of the other barrel, the inner end of the one barrel having an external thread and a fixed bushing on the inner end of the other barrel having an internal thread, the external thread meshing with the internal thread for adjustably interconnecting the inner barrel ends upon rotation of the barrels in respect of each other for selecting different axial positions of the barrels resulting in correspondingly different lengths of the beam section, a nut threadedly mounted on the external thread for abutting engagement with the fixed bushing for fixedly maintaining a selected one of the axial positions, a flange rigidly connected to the outer ends of the barrels, and a removably sleeve arranged to cover the one barrel, the sleeve having an outer diameter substantially identical with the outer diameter of the one barrel.

3,853,288

ENCASEMENT FOR THE TAIL SECTION OF A ROCKET WITH A CENTRAL NOZZLE AND EXTENDIBLE CONTROL VANES

Helmut Bode, Falladastrasse 1a, Celle, Germany

Continuation-in-part of Ser. No. 654,022, July 17, 1967, abandoned. This application Sept. 18, 1969, Ser. No. 863,412
Int. Cl. F42b 13/32
U.S. Cl. 244—3.29 22 Claims



1. In a rocket having a generally cylindrical casing and a central nozzle extending from the rear end portion of said casing and of smaller cross-section than such rear end portion, vane means including at least one rigid control vane, means on said rocket on the outside of the nozzle and within a space concentric with and of the same diameter as the rear end portion of the casing pivoting said vane for swinging movement between an inoperative retracted position substantially entirely within said space and an operative position in which

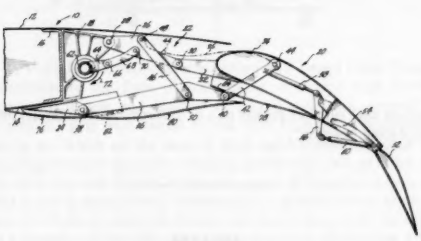
the vane extends outside the space, and means carried by said rocket to form a substantially cylindrical cover enclosing at least the greater part of the periphery of said space, one of said vane mounting means and said cover forming means being movable with respect to the rocket during movement of the vane to operative position.

3,853,289

TRAILING EDGE FLAP AND ACTUATING MECHANISM THEREFOR

Carroll H. Nevermann, and Ellis J. Roscow, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Feb. 15, 1973, Ser. No. 332,555
Int. Cl. B64c *3/50*
U.S. Cl. 244—42 DA 7 Claims



1. An extending and retracting mechanism for a trailing edge flap system attached to a wing, said wing having a rear main spar and fixed structure affixed thereto, said flap system including at least a main flap segment having a rearward portion, the mechanism comprising:

first link means pivotally connected at a first location thereon to said fixed structure adjacent the rear main spar of said wing and pivotally connected at a second location thereon to said main flap segment,

second link means pivotally connected at a first location thereon to said fixed structure below said first link means adjacent the rear main spar of said wing, the major portion of said main flap segment being located rearwardly of the pivotal connections of said first and second link means to said fixed structure,

third link means pivotally connected at a first location thereon to said main flap segment and pivotally connected at a second location thereon to a second location on said second link means, the pivotal connections of said first and third link means to said main flap segment being spaced from each other,

programming link means pivotally connected at a first location thereon to a third location on said first link means and pivotally connected at a second location thereon to a third location on said second link means, said third location on said first link means being positioned between said first and second locations on said first link means, said third location on said second link means being positioned between said first and second locations on said second link means, said first, second and third link means and said programming link means being arranged so that the second location of said first link means prescribes a retraction path relative to said wing which includes a downwardly and forwardly curved portion preceding an upwardly and forwardly curved portion, said main flap segment being oriented downwardly and rearwardly relative to said wing in an extended position, the rearward portion of said main flap segment being rotated upwardly about said second location on said first link means as said second location on said first link means follows said retraction path, and

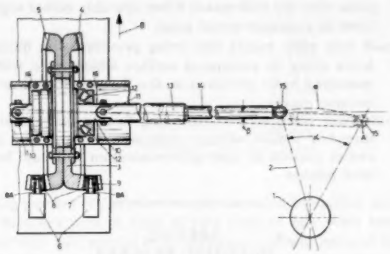
power means for actuating said link means.

3,853,290

DRIVE GEARING FOR FOLDING AIRCRAFT WINGS

Friedrich Bremm, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed Mar. 6, 1973, Ser. No. 338,585
Claims priority, application Germany, Mar. 16, 1972, 2212648
Int. Cl. B64c *3/38*
U.S. Cl. 244—46 4 Claims



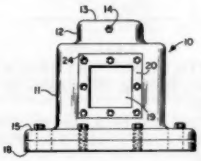
1. A drive arrangement for moving the folding wings of an aircraft having a variable sweepback characteristic, said folding wings being movable through pivoted lever means, said drive arrangement including motor driven gear means for transmitting its rotary sides through two jointed couplings which are arranged on both sides thereof onto two shafts means, the rotary movement of which is used for operating said pivoted lever means, comprising the improvement wherein said motor driven gear means comprises a pair of back-to-back bevel gears and a pair of fixedly mounted motors each having a rotatable output shaft parallel to the other and a single bevel pinion mounted on each output shaft of said motors fixedly engaging the teeth of the respective one of said bevel gears, said bevel pinions and the axes of rotation of said output shafts on said motors being positioned on opposite axial sides of said back-to-back bevel gears, said axes of rotation of said output shafts extending in a plane generally parallel to the axis of rotation of said back-to-back bevel gears, said motors and pinions being adapted to support at least a portion of the axial thrust applied to said back-to-back bevel gears.

3,853,291

EXPLOSION-PROOF POLE BASE MEANS

Errol J. Burke, 409 Fillmore Ave., New Orleans, La. 70124

Filed Aug. 27, 1973, Ser. No. 392,067
Int. Cl. F16m *13/00*
U.S. Cl. 248—158 2 Claims



1. An explosion-proof pole base comprising:

a. housing means comprising an elongated hollow base portion having one of its ends provided with a female threaded portion adapted to receive pole means provided with a male threaded portion whereby an explosion-proof connection is realized between said housing means and the pole means when operably connected thereto;

and its other end defining an outwardly extending flanged portion machined along its outer peripheral bottom surface, which flanged portion is provided with a number of spaced apart mounting holes and drilled holes for connection to base plate means as hereinafter defined; and

b. base plate means of a configuration and having an upper machined surface adapted to operably mate with the machined bottom surface of the flanged portion of said housing means for connection thereto by suitable bolting means via the drilled holes provided in the flanged portion of said housing and the threaded holes in said base plate whereby said means when operably bolted together form an explosion-proof joint;

said base plate means also being provided with mounting holes along its peripheral surface which mate with the mounting holes provided in the flanged portion of said housing means;

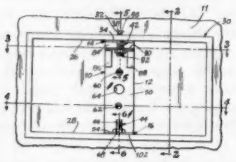
said base plate means also being further defined in that threaded female conduit openings are provided in its center portion in open communication with said hollow base portion.

3,853,292

MOUNTING BRACKET

Heinrich J. Junk, Maplewood, Mo., assignor to Chamois Electronic Manufacturing Company, Inc., Chamois, Mich.

Filed Feb. 1, 1973, Ser. No. 328,873
Int. Cl. A47b *77/08, 67/00;* **A47f** *5/08*
U.S. Cl. 248—203 **15 Claims**



1. A bracket for securely mounting to a wall or the like a device having sides with opposed inner surfaces, said bracket comprising an elongated support member adapted to be mounted to said wall or the like and having opposed, outwardly extending arms positioned to fit within said opposed inner surfaces of said device, said arms including opposed outwardly-extending projections adapted to engage orifices in said opposed inner surfaces of the device, at least one such arm including bias means urging the projection thereof outwardly, at least one of the projections being adjustable substantially into the plane of the cooperating inner surface and in a close supporting relationship thereto.

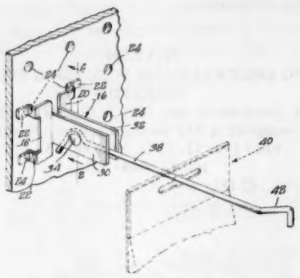
3,853,293

ARTICLE SUPPORT BRACKET

Charles O. Larson, Sterling, Ill., assignor to Chas. O. Larson Co., Sterling, Ill.

Filed Feb. 15, 1973, Ser. No. 332,902
Int. Cl. A47g *23/02;* **A47f** *5/00;* **F16m** *13/00*
U.S. Cl. 248—223 **8 Claims**

1. An article support device for use with apertured panels such as pegboards and the like including a plate bracket member for engagement with the outer surface of a vertically disposed apertured panel, means associated with said plate member for interlocking with an aperture of said panel for securing said plate in flush engagement therewith, elongate article support means adapted to engage said plate bracket outwardly of said outer surface and to project outwardly from said plate member when said plate member is secured to said apertured panel, and means formed on said plate bracket for clampingly engaging said elongate article support means to



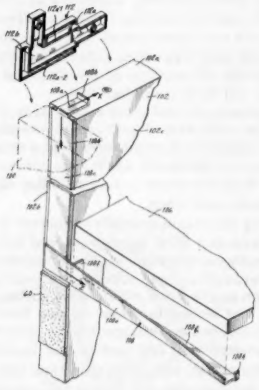
secure said support means in a predetermined article accommodating position.

3,853,294

SUPPORT BRACKET

Don C. Albinson, Coopersburg; William I. Stephens, Telford; Charles R. Cawley, Jr., Barto, and Richard Baier Hopkins, Pennsburg, all of Pa., assignors to Knoll International, Inc., New York, N.Y.

Division of Ser. No. 119,457, March 1, 1971, abandoned. This application Mar. 2, 1973, Ser. No. 337,426
Int. Cl. E04g *3/10;* **A47b** *9/00;* **A47f** *5/10*
U.S. Cl. 248—235 **4 Claims**

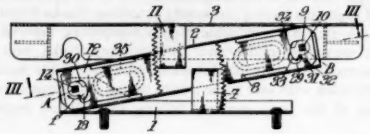


1. A support bracket for supporting a shelf or the like and which in turn is adapted to be supported by a panel, comprising a first leg in a horizontal XZ plane, a second leg joined to the first leg and extending downwardly therefrom in a vertical YZ plane, and a third leg spaced substantially below the first leg and joined to the second leg and extending outwardly for a substantial distance in the Z direction, in which the directions X, Y and Z are substantially perpendicular to each other and the first leg terminates in an upwardly extending lip.

3,853,295
VERTICALLY ADJUSTABLE SUPPORTS FOR VEHICLE SEATS

Georges Etienne Christin, Marnes-la-Coquette, France, assignor to Etablissements Bertrand Faure, Putreaux, France

Filed Oct. 3, 1972, Ser. No. 294,559
Claims priority, application France, Oct. 6, 1971, 71.36038
Int. Cl. F16m *13/00*
U.S. Cl. 248—396 **5 Claims**



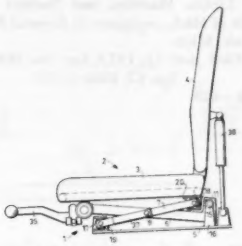
1. Vehicle seat support, comprising a first rigid lower frame fastenable to the floor of the vehicle, a second rigid frame mounted at one end thereof in pivoting fashion around a horizontal first axis linked to the first frame and extending along the width of the seat, a third rigid frame mounted in pivoting fashion around a second horizontal axis parallel to the first axis and linked to the other end of the second frame, first locking means easily operated by a person occupying the seat to block or unblock the second frame in one or another of a plurality of its different angular positions of pivoting with respect to the first frame around the first axis, second locking means easily operable by said person to block or unblock the third frame in one or another of a plurality of its different angular positions of pivoting with respect to the second frame around the second axis, a control means easily accessible to the seated person, said first and second locking means being arranged so as to be controllable alternately by said control means, the first locking means comprising two toothed sectors centered on the first axis and adapted to coact between themselves on locking, of which one sector is fast to the first frame and of which the other is mounted in radially sliding manner upon the second frame under the control of a rotating cam fast to a camshaft centered on the second axis, the second locking means also comprising two toothed sectors centered on the second axis and adapted to coact between themselves on locking, of which one sector is fast to the third frame and of which the other is mounted in radially sliding fashion upon the second frame under the control of a rotating cam fast to a camshaft centered upon the first axis and the two cams being permanently elastically urged towards their angular position corresponding to locking.

3,853,296
VEHICLE SEAT WITH SUSPENSION DEVICE

Carl Fredrik Johan Sigvard Forssell, Goteborg, Sweden, assignor to AB Volvo, Goteborg, Sweden

Filed Mar. 2, 1973, Ser. No. 337,364
Claims priority, application Sweden, Mar. 3, 1972, 2741/72
Int. Cl. F16m *13/00*
U.S. Cl. 248—399 **2 Claims**

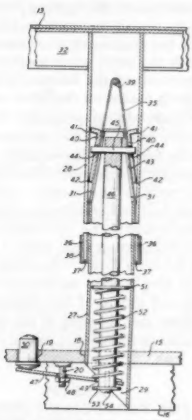
1. In a vehicle seat with a suspension device comprising two pairs of link arms, at least one of said link arms in one of said pairs of link arms being rigidly joined to the corresponding link arm of the other pair of link arms, said two pairs of link arms being arranged on opposite sides of said seat, a portion of the vehicle supporting said seat, said seat being movable toward and away from said supporting portion in a direction substantially perpendicular to said supporting portion, each of said link arms having three places of connection, namely at said point of intersection, the bottom of said seat and said supporting portion, a first link arm of each of said pairs of link arms being joined pivotally at said three places of connection, the second link arm of each of said pairs of link arms being pivotally joined at one of said places of connection and substantially horizontally displaceable at said two other places of connection, and spring means to counteract said movement of said seat bottom in said direction towards said supporting portion; the improvement in which the points of pivotal connection of said first arm to said seat bottom and to said supporting portion are at substantially the same horizontal level, said first link arm in each of said pairs of link arms being longer than said second link arm in each of said pairs of link arms, said ends of said first link arm being situated outside said ends of said second link arm seen sideways of said seat.



3,853,297
SUPPORTING STAND

J. Guy Drolet, Laval, Quebec, Canada, assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed May 15, 1973, Ser. No. 361,095
Int. Cl. E04g *25/08*
U.S. Cl. 248—412 **9 Claims**



1. A stand comprising a base assembly, a work-supporting surface, a post extending between the base assembly and the work-supporting surface and means for controlling the height adjustment of said surface, said means including inner and outer post sections, the inner section being mounted on the base, the outer section being telescopically fitted over the inner section, the inner section having at least one upper side surface slanted away from an adjacent surface of the outer section to form a wedging space, a vertically movable locking wedge in said space, an actuating rod connected to said wedge and extending downwardly therefrom to a point adjacent the base, a release means in the base, a compression spring effectively interposed between the release means and the actuating rod, the spring being compressible by operation of the release means to bias the actuating rod and wedge toward unlocking

position with a force insufficient to move the wedge until the outer section is lifted.

3,853,298

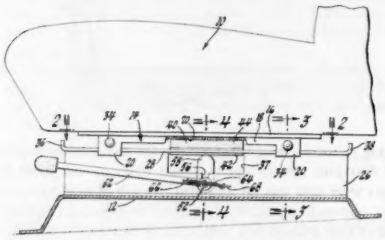
ENERGY ABSORBING SEAT ADJUSTER

Herbert A. Libkie, Mariette, and Norbert T. Okoniewski, Utica, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed June 11, 1973, Ser. No. 368,606

Int. Cl. B60r 21/10

U.S. Cl. 248—429 **1 Claim**



1. An energy absorbing device for adjustably mounting a seat in a vehicle body comprising: a first track member attached to the vehicle seat, a second track member attached to the vehicle body, the first and second track members being slidably interengaged to permit longitudinal fore and aft movement of the seat relative the vehicle body, means limiting vertical movement between the first and second track members, a friction shoe including a backing plate and a shearable friction lining mounted on the backing plate, means mounting the friction shoe on one of the track members to permit vertical movement of the friction shoe to frictionally engage the friction lining with the other track member while preventing longitudinal movement of the friction shoe relative the one track member, teeth means on the other track member being engaged by the friction lining, occupant actuable cam means effective to forcibly move the friction shoe vertically to frictionally engage the friction lining with the teeth means of the other track member to selectively lock the track members from movement relative one another and unlock the track member to permit fore and aft adjusting movement of the seat relative the vehicle body, the frictional engagement of the friction lining of the friction shoe against the teeth means of the other track member being overcome by kinetic impact energy to permit longitudinal movement between the track members and forced sliding of the friction lining against the other track member and shearing of the friction lining by the teeth means to absorb the kinetic impact energy.

3,853,299

APPARATUS FOR PRODUCING TUBING, ESPECIALLY FROM MATERIAL SUITABLE FOR INJECTION MOLDING

Bernhardt Kessel, Ingolstaedter Str. 20, 8073 Koeschling, Germany

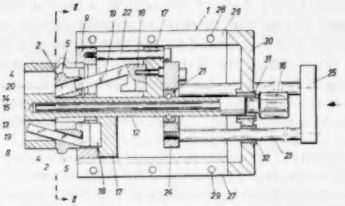
Filed Sept. 25, 1972, Ser. No. 292,147

Claims priority, application Germany, Sept. 25, 1971, 2147922

Int. Cl. B28b 7/30

U.S. Cl. 249—178 **10 Claims**

1. In an apparatus for producing tubing from injection molding material which tubing is provided in its wall with an outwardly directed corrugation produced simultaneously with the injection molding step by means of a forming ring having alternating large and small radially displaceable individual segments which are withdrawn upon the completion of the injection molding steps inwardly toward the longitudinal axis of the apparatus, radially outer surfaces of said segments defining the inner diameter of the tubing to be molded; the improvement comprising guide means along all the flanks of the large and small segments facing each other and intercoupling said small and large segments whereby radial displacement of said small segments effects radial displacement of said large segments in the same direction and positive drive means operatively connected to said small segments, said drive means extending at an angle relative to said longitudinal axis of the apparatus, and comprising outrigger arms for radially moving said small segments, said outrigger arms extending at an angle relative to the longitudinal axis of the apparatus, said small segments having outwardly extending flanks forming an acute angle (β), said guide means comprising tapered slide guide means on said outwardly extending flanks, said large segments also having flanks with tapered slide guide means for cooperation with said guide means of the small segments, said flanks of the large segment having an included angle (α)



which is larger than the respective angle (β) of the small segments whereby all segments are included in a positive guide for their simultaneous movement radially inwardly and outwardly, a first and second disk, said segments being arranged between said disks, one of said disks having an outer diameter corresponding to the inner diameter of the tubing to be molded, collar bolts for interconnecting said disks and shoulder means for assuring a definite spacing between said disks for assuring a gliding movement of said segments between the disks, said large segments having longitudinal, radially extending apertures through which said collar bolts extend to permit a gliding movement of the segments relative to the respective collar bolt, and relative to said disks, whereby a positive driving force in the radial direction is applied to said small segment prior to the radial withdrawal of said outer surfaces which define the inner diameter of the tubing to be molded.

3,853,300

VALVES FOR THE PRESSURE MEDIUM IN HYDRAULIC OR PNEUMATIC LIFTING DEVICES

Anders Ivar Bryntse, Mjolby, and Karl-Erik Berkestad, Linkoping, both of Sweden, assignors to AB Bygg- Och Transportekonomi (BT), Mjolby, Sweden

Filed Sept. 25, 1973, Ser. No. 400,630

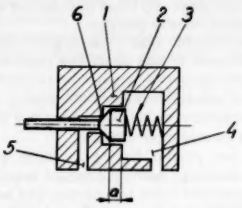
Claims priority, application Sweden, Oct. 3, 1972, 12734/72

Int. Cl. F16k 47/04

U.S. Cl. 251—120 **4 Claims**

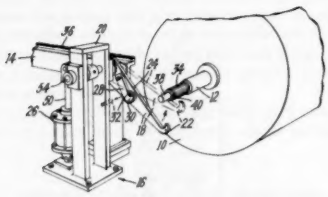
1. A valve comprising a housing having an inlet and an outlet and a passage between said inlet and outlet, a valve seat formed on said housing and surrounding said passage, a first cylindrical chamber of relatively small diameter on the inlet side of said valve seat, a second cylindrical chamber of relatively large diameter coaxial with said first chamber and on the inlet side of said first chamber, and a valve member recip-

rocable in said passage coaxially of said chambers, said valve member comprising a cone that bears against said seat in the closed position of said valve member, a valve stem reciprocable in said housing on the outlet side of said cone, said cone on the inlet side thereof terminating in a cylinder coaxial with



and disposed within said first chamber in said closed position, said cylinder having the largest diameter of any portion of the valve member, said cylinder being movable out of said first chamber and entirely into said second chamber upon manipulation of said valve stem.

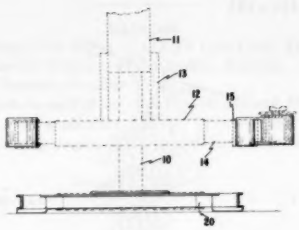
3,853,301
ROLL JACKS
Barney E. Kuconis, 135 McKay St., Beverly, Mass. 01915
Filed May 14, 1973, Ser. No. 359,869
Int. Cl. B66f *3/00*
U.S. Cl. 254—124 **4 Claims**



1. A jack, comprising: a first arm pivoted at one end on a support and having a load retaining hook at the other, free end; means for pivoting the first arm relative to the support; a second arm having a load retaining hook at a free end positioned intermediate ends of the first arm and connected to the first arm at the other end for pivotal movement of the hook of the second arm above a load lifting side of the first arm, which side of the first arm ends in the hook of the first arm; and means operable for retaining the hooked end of the second arm above the lifting side of the first arm.

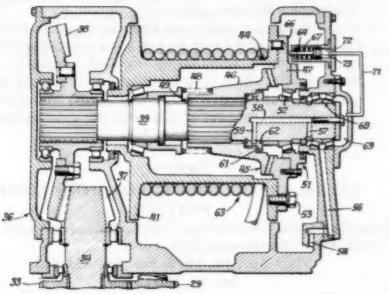
3,853,302
JACK SUPPORT EXTENDER
Francis D. Voss, P.O. Box 212, Emerson, Nebr. 68733
Filed June 28, 1973, Ser. No. 374,577
Int. Cl. B66f *13/00*
U.S. Cl. 254—133 R **2 Claims**

1. In combination a jack having a load engaging arm and a device for extending the arm of said jack, said arm having original cup means forming sockets at the extremities thereof, said device comprising tongue means adapted to be placed in said sockets, said socket is of square cross section and said tongue is of circular cross section having a diameter such that said tongue fits smoothly into said socket and is pivotally engaged therein, said device further comprising auxiliary cup means spaced apart from said tongue means, and support means for said cup means including upper web means attached rigidly to both said auxiliary cup means and said tongue means and bracing web means extending from said auxiliary cup means toward said tongue means but terminating in spaced relation thereto such that such bracing web means



is adapted to engage said original cup means when said tongue means is placed into said original cup means.

3,853,303
WINCH BRAKE ASSEMBLY
Ronald E. Wineburner, Pekin, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed June 8, 1973, Ser. No. 368,232
Int. Cl. C11d *7/00*
U.S. Cl. 254—150 R **3 Claims**

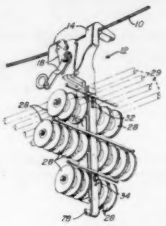


1. A winch unit comprising
a power input member,
a power train including at least one clutch coupled to the input member, the power train including an output shaft, a cable drum,
a normally engaged gear clutch arranged between the output shaft and the cable drum, the normally engaged clutch being disengageable to permit free-wheeling rotation of the cable drum, and
brake means simultaneously actuatable along with the normally engaged clutch to produce limited drag on the cable drum and prevent excessive rotation of the cable drum during free-wheeling operation,
the normally engaged clutch and the brake means being hydraulically operable by fluid pressure introduced into the respective actuating chambers in communication with each other.

3,853,304
MULTI-SHEAVE AERIAL BLOCK

Richard L. Jackson, Lewisburg, Ohio, assignor to Jackson Communication Corporation, Brookville, Ohio

Filed Dec. 4, 1972, Ser. No. 311,804
Int. Cl. B66d 1/36
U.S. Cl. 254—193 **15 Claims**

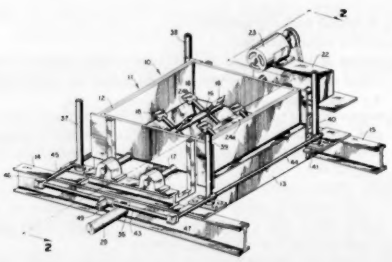


1. An aerial block comprising:
a. strand engaging hook means,
b. an elongated base frame extending from said hook means substantially vertically downwardly during normal use of said block,
c. a plurality of axles projecting outwardly from said elongated base frame in vertically spaced, parallel relationship to each other and substantially perpendicular with respect to a strand engaged by said hook means,
d. a plurality of grooved sheaves rotatably mounted on said axles for simultaneously receiving a plurality of cables with each of the cables being separately received in a groove of a sheave,
e. a single keeper means associated with a plurality of said sheaves received on vertically spaced axles for retaining cables in the grooves of the vertically spaced sheaves when said keeper means is positioned in cable retaining relationship thereto, and
f. means mounting said keeper means on said aerial block for moving said keeper means simultaneously from said cable retaining relationship to said vertically spaced sheaves with which it is associated to a second position spaced therefrom and permitting access thereto for the placement or removal of cables in the grooves thereof.

3,853,305
MIXING APPARATUS WITH DROPOUT LOWER PORTION

Erbie Gail Mize, Chattanooga, Tenn., assignor to Astec Industries, Inc., Chattanooga, Ind.

Filed Apr. 16, 1973, Ser. No. 351,413
Int. Cl. B01f 7/04
U.S. Cl. 259—179 **9 Claims**

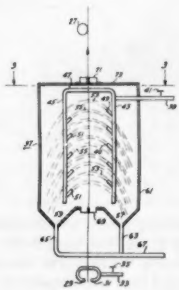


1. Pugmill mixing apparatus comprising:
a mixing box for receiving a quantity of material to be mixed, said mixing box including an upper box portion and a lower box portion;
support means mounting said upper and lower box portions for selective relative positioning in an operational position, whereat said upper and lower box portions are proximal to each other, and to a nonoperational position, whereat said upper and lower portions are separated from said proximal relative position;
at least one rotatable shaft extending through and in fixed position relative to said upper box portion;
motive means operatively connected to rotate said shaft;
a plurality of mixing elements connected to said shaft for mixing movement within said mixing box when said shaft is rotated by said motive means;
said lower box portion having a bottom portion with a material discharge opening disposed therein; and
gate means on said lower box portion and selectively positionable to block or to unblock said discharge opening.

3,853,306
APPARATUS FOR QUENCHING MOLTEN COATINGS

George Padjen, and Joseph A. Brugger, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Division of Ser. No. 213,143, Dec. 28, 1971, Pat. No. 3,743,535. This application Feb. 28, 1973, Ser. No. 336,653
Int. Cl. C21d 1/64
U.S. Cl. 266—3 R **6 Claims**

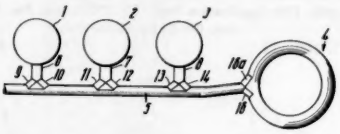


1. Apparatus for cooling moving molten material coated wire-like material comprising:
a. a cooling chamber defining a vertical path for said wire-like material,
b. means to form at least one liquid cooling jet within said cooling chamber, said means being arranged to direct said cooling jet as a discrete free stream of liquid upwardly at an angle other than vertically with the path of said stream intersecting the path of said wire-like material at the apex of the path of said discrete stream of cooling liquid where substantially all vertical components of the movement of said stream is dissipated,
c. said means for forming said liquid cooling jet comprising header means for conveying cooling liquid from an external source into the vicinity of the cooling chamber and nozzle means connected to the header means and inclined upwardly at an angle such that a stream of cooling liquid ejected from the nozzle means is projected upwardly at an angle such that the stream of coolant intersects the path of the wire-like material at the apex of the stream of coolant just prior to beginning to fall in a descending arc downwardly from the said apex, and
d. means to collect said descending coolant.

3,853,307
CONDUIT SYSTEM FOR THE TRANSPORT OF HOT GASES, ESPECIALLY HOT-BLAST AIR FOR A BLAST FURNACE, WHICH CONDUIT SYSTEM INCLUDES A CONNECTOR PLUG

Hendrik Gustaaf Otto Weber, Heiloo, Netherlands, assignor to Hoogovens IJmuiden BV, IJmuiden, Netherlands

Filed July 18, 1973, Ser. No. 380,237
Claims priority, application Germany, July 19, 1972, 2235416
Int. Cl. F27b *1/10*
U.S. Cl. 266—30 **7 Claims**

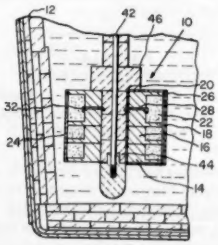


1. A conduit system for the transport of hot gases such as hot air blasts from a blast furnace, said system comprising
   a. a substantially horizontal metal pipeline having a refractory brickwork lining,
   b. a pipe section having substantially the same inner diameter as said horizontal pipeline,
   c. a connection between said pipeline and said pipe section,
   d. means for bevelling said connection, said means including members comprising portions of a cylindrical surface between said pipeline and said pipe section,
   e. means for joining said pipe section, pipeline, and bevelling members so that the common transitions of said pipe section, pipeline, and bevelling members at the upper and lower sides of said connection are formed as upper and lower planar surfaces, and
   f. means for providing a flat suspended brick construction as a refractory lining of said upper planar surface.

3,853,308
APPARATUS FOR LADLE ADDITIONS

George Rocher, Pittsburgh, Pa., assignor to Metallurgical Exoproducts Corporation, McKees Rocks, Pa.

Continuation-in-part of Ser. No. 428,764, Dec. 27, 1973, abandoned. This application Feb. 11, 1974, Ser. No. 441,290
Int. Cl. C21c *7/00*
U.S. Cl. 266—34 T **13 Claims**

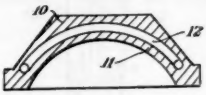


1. A ladle addition assembly suitable for installation on a refractory lined rod extending substantially vertically in a ladle comprising:
   A. a plurality of stacked container means each having an aligned central opening for positioning on the rod;
   B. apertured locking plate means positioned adjacent at least one container means, said aperture in registry with the aligned central opening, said plate means slidably accommodating relative movement with the refractory lined rod in a first direction and lockably engaging the rod to prevent relative movement in an opposite direction; and
   C. securement means cooperating with the container means and plate means to maintain the container means and plate means in assembled relationship.

3,853,309
COMPONENTS USING CAST-IN COOLING TUBES

Colin Frederick Widmer, 67 Levenside, Stokesley, Middlesbrough, Teesside, England

Continuation-in-part of Ser. No. 342,486, March 19, 1973, abandoned. This application Feb. 28, 1974, Ser. No. 446,602
Claims priority, application Great Britain, Mar. 20, 1972, 12993/72
Int. Cl. C21b *7/16*
U.S. Cl. 266—41 **13 Claims**

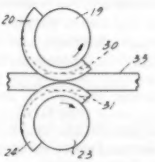


1. A casting intended for heat transference between the body of the casting and a fluid passing through a tube embedded therein during casting, the said tube being a thin walled flexible corrugated tube with an internal surface area between 1.75 and 5 times that of a cylindrical surface of the same diameter as the minimum diameter of the tube.

3,853,310
TAPER LEAF SPRING BLANK

Gus L. Poulos, Winamac, Ind., assignor to Spectra McIntosh Corporation, Chicago, Ill.

Filed May 8, 1970, Ser. No. 35,705
Int. Cl. F16f *1/18*; **B60g** *11/02*
U.S. Cl. 267—47 **1 Claim**



1. A tapered leaf spring blank generally rectangular in cross section and having upper and lower high stress surfaces and side edges between said high stress surfaces defining low stress areas of the blank having flash located between the upper and lower high stress surfaces of the blank along the low stress areas along the sides of the blank.

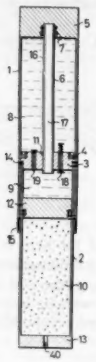
3,853,311
SHOCK ABSORBER FOR AUTOMOBILE BUMPER

Dieter Kreuzer, and Dieter Lutz, both of Schweinfurt am Main, Germany, assignors to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed Feb. 20, 1973, Ser. No. 333,978
Claims priority, application Germany, Feb. 26, 1972, 2209158
Int. Cl. F16f *9/346*; **B60r** *19/06*
U.S. Cl. 267—64 R **9 Claims**

1. An elongated shock absorber comprising, in combination:

a. a cylinder member having an axis and defining a sealed cavity therein;
b. a piston rod member axially projecting from said cavity and engaging said cylinder member for relative axial movement between a first position in which the axial length of said shock absorber reaches a maximum, and a second position in which said length reaches a minimum;
c. a piston attached to said piston rod member in said cavity and dividing said cavity into first and second axially offset chambers;
d. yieldably resilient means biasing said members toward said first position;



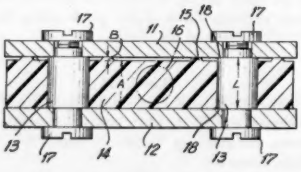
e. a sleeve member lining the inner face of said cylinder member in said cavity and movably engaging said piston, respective axial portions of said sleeve member extending in said chambers,
1. said sleeve member bounding a permanently open conduit between said chambers and being formed with an axial slot,
2. a portion of said slot longitudinally defined by said piston constituting the orifice of said conduit in said first chamber, the flow section of said orifice varying during relative movement of said sleeve member and said piston; and
f. fluid filling said chambers and said conduit under the pressure of said yieldably resilient means.

3,853,312

FIXING STRUCTURE OF PLASTIC MEMBER

Toshiaki Saito, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed June 28, 1971, Ser. No. 157,514
Claims priority, application Japan, June 27, 1970, 45-63480
Int. Cl. F16f *3/08*
U.S. Cl. 267—152 **2 Claims**



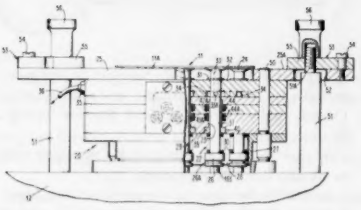
1. An improvement in an instrument having elements spaced apart by pillars having a length lying in the range between L and L + ΔL, comprising a block of a resilient plastic for insertion between said elements, said block having a thickness not greater than L and having thereon at least one projection of length such that the thickness of said plastic element plus the length of said projection exceeds L + ΔL, said projection being compressible to an extent such that the thickness of said block plus the thickness of said projection does not exceed L.

3,853,313

WAFER INTERLOCKING TRANSPORT SYSTEM

Henry Albert Appenzeller, Wallkill; Joseph Charles Miller, and Vincent Shea, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 309,408, Nov. 24, 1972, Pat. No. 3,786,660. This application Sept. 17, 1973, Ser. No. 398,292
Int. Cl. B25b *11/00*
U.S. Cl. 269—21 **4 Claims**



1. A contoured wafer, transport apparatus, said apparatus comprising: a pallet having a plurality of pedestals therein, vacuum cups at one extended end of said pedestals for supporting and gripping a wafer thereon, and means for supplying a source of vacuum to said vacuum cups, means to permit reciprocation of each of said pedestals in said pallet, a passageway through said pallet surrounding a plurality of said pedestals, and locking means to lock individual ones of said pedestals in an individually determinable position, said locking means comprising, a collet circumscribing each of said plurality of said pedestals, each of said collets having at least one axially extending slit in the sidewall thereof; and means for restraining axial movement of said collet, at least one expansible tube means snaked in and through said passageway and substantially surrounding said collets associated with said pedestals, and means for applying a fluid pressure to said tube means to expand the same against said collets thereby decreasing the diameter of said collets and locking said pedestals in a predetermined position.

3,853,314

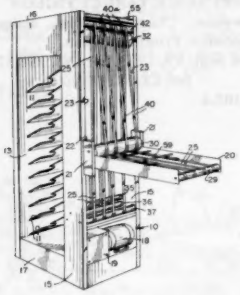
COLLATING MACHINE

Eugene A. Anderson, 414 W. Taylor Rd., Lombard, Ill.

Filed Nov. 13, 1972, Ser. No. 305,662
Int. Cl. B65h *29/60*
U.S. Cl. 271—173 **12 Claims**

1. A vertical collating machine of the type in which a plurality of sheet receiving bins are arranged in vertically stacked relation including a support structure for the vertically stacked bins and conveying mechanism for delivering sheets to said bins, said conveying mechanism including a first sheet delivery endless belt having a vertical reach component positioned adjacent the entry end of each bin, said belt traveling vertically through said collating machine adjacent to the entrances to said vertically stacked bins, said belt including a horizontal reach component extending generally outwardly away from said bins and with respect to said vertical component, said belt having a second vertical reach component extending upwardly from a juncture thereof with said horizontal reach component, said mechanism including a second sheet transfer endless belt having a vertical reach component extending upwardly from adjacent said juncture in parallel

relation to said second vertical reach component of said first belt and in overlapping relation to said first belt to a point adjacent the upper end of said collating machine so as to grip sheets between the first and second belts, said second belt including a component of reach extending generally horizontally with respect to said vertical component of said second belt over said stacked bins, support pulleys for said belts, at least one of said pulleys carrying said vertical component of said second belt being located adjacent said juncture, and



support means carrying said one pulley and supporting said horizontal reach component of said first belt, said support means being vertically adjustable on said support structure for the vertically stacked bins whereby to adjust said one pulley and said belts vertically, said horizontal reach component of said first belt forming an entranceway adjacent said juncture to receive sheets and defining an infeeding station for delivering sheets to the gripping action of said overlapping belt portions and to gate devices for delivery to said bins, said gate devices transferring said sheets from the conveyor to the bins.

3,853,315

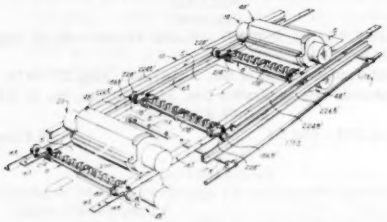
SHEET FEEDER FOR PRINTING PRESSES

Harold P. Dahlgren, 726 Regal Row, Dallas, Tex. 75247

Continuation-in-part of Ser. No. 737,521, June 17, 1968, Pat. No. 3,664,261. This application May 4, 1972, Ser. No. 250,448

Int. Cl. B65h *29/04*

U.S. Cl. 271—204 **2 Claims**



1. A device for moving a sheet of paper in a printing press comprising, spaced aligned sheet transfer carrier guide members rotatably journaled adjacent each end of the press; continuous flexible sheet transfer carriers extending about the carrier guide members at each side of the press and being rotatable with the guide members; a plurality of slotted blocks mounted in spaced apart peripheral relationship on the guide members to cause the carriers to rotate with the guide members; means to drive the carriers; a plurality of spaced gripper bars; means to secure opposite ends of said bars to said carriers; surfaces on each of said gripper bars engageable with slots in said blocks, at least one gripper member mounted on each gripper bar for gripping the edge of a sheet; means to actuate the gripper members to engage the edge of the sheet at one end of the press; means to actuate the gripper members to release the sheet at the other end of the press; and gripper bar guide means secured to opposite sides of the press to guidably support the gripper bars, said gripper bar guide means having guide surfaces to direct the gripper bars from one end of the press to the other along a path having no abrupt changes in direction whereby dynamic forces transferred by a gripper bar to the carriers as a gripper bar is moved longitudinally from one end of the press to the other is substantially constant.

3,853,316

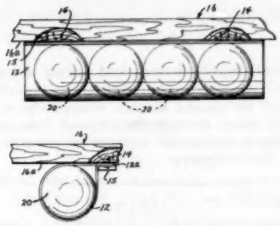
TABLE TENNIS BALL HOLDER

Max D. Smith, Evansville, Ind., assignor to Indian Industries, Inc., Evansville, Ind.

Filed Dec. 22, 1972, Ser. No. 317,419

Int. Cl. A63b *39/00*

U.S. Cl. 273—30 **3 Claims**



1. The combination of:

a table tennis board having a peripheral edge, a top horizontal playing surface and a bottom horizontal surface beneath said playing surface;

a table tennis ball holder mounted to said table at said edge, said holder being sheet material of flexible plastic shaped to form a tube with an open end through which one table tennis ball at a time is forceably moved as said tube is manually compressed, said tube being cylindrical with an inside diameter of a dimension to snugly hold a conventional table tennis ball with said sheet including a pair of horizontally extending edge portions projecting outwardly from said tube; said edge portions including a first pair of adjacent longitudinally extending edge portions in overlapping relationship, and means securing both edge portions to said board.

3,853,317

AQUATIC BASEBALL GAME

Harold N. Braunhut, c/o Honey Toy Industries, Inc., 200 Fifth Ave., New York, N.Y. 10010

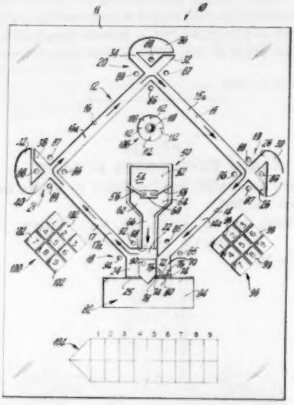
Filed Oct. 3, 1973, Ser. No. 403,107

Int. Cl. A63f *7/06*

U.S. Cl. 273—88 **31 Claims**

1. A baseball game wherein movement between the bases is performed by aquatic animals that instinctively tend to swim against the direction of flow of a current of water, the game comprising an open channel defining a baseball diamond the corners of which define three bases and a home plate; safe and

out zones provided in proximity to each of the corners in fluid-flow communication with said channel, movement into one or the other of said zones in proximity to any of said corners respectively representing an out or a safe play; and circulating means for circulating a stream of water through



said diamond-shaped channel, said stream of water having a direction of flow which is opposite to the desired direction of movement of the aquatic animals, wherein the reverse flow of a stream of water through the channel induces an aquatic animal to move around the bases to simulate running of the bases by a baseball player.

3,853,318

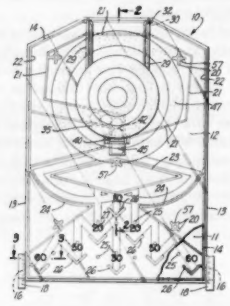
COMBINATION DART AND PINBALL APPARATUS

Bernard J. Cagan, Torrance, Calif., assignor to Placo Products Company, Torrance, Calif.

Filed Apr. 24, 1973, Ser. No. 354,017

Int. Cl. F41j *7/16*

U.S. Cl. 273—102.1 G **5 Claims**



1. A game board for a combination dart and pinball game comprising a substantially vertical game board, a movable target mounted on said board for horizontal movement rearwardly toward and forwardly from said game board, a pinball game area on said board beneath said target, a ball movable along said pinball area, ball release means operable upon rearward movement of said movable target to release said ball for downward movement by gravity along the pinball area of said board, ball holding means disposed behind said movable target, a parallelogram linkage extending between, said movable target and said game board, said parallelogram linkage being connected adjacent to the upper and lower portions of said target and a coil spring extending rearwardly from the center of said target, said spring normally holding said target in forward ball holding position, said target upon being struck being movable rearwardly against the pressure of said coil spring to operate said ball release means.

3,853,319

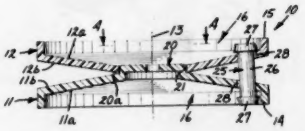
REUSABLE TARGET PIGEON

Bernard H. Swanson, Champlin, Minn., assignor to Super Pigeon Corporation, Princeton, Minn.

Filed Sept. 19, 1973, Ser. No. 398,570

Int. Cl. F41j *9/00*

U.S. Cl. 273—105.4 **7 Claims**



1. A reusable target pigeon comprising:

a. first and second cooperating generally circular body members each having an annular axially inner surface and an axially outer surface;

b. connecting means releasably connecting said body members together at their central portion in axial alignment and disposing said inner surfaces thereof in opposed radially outwardly diverging relationship;

c. and tie means connected to said body members for limiting movements of said body members away from each other beyond a closely spaced apart relationship when said body members are disconnected from each other at said central portions thereof.

3,853,320

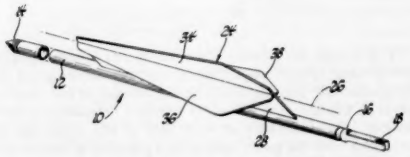
ARROW

Richard F. Carella, 35572 Strathcoma, Mount Clemens, Mich. 48043

Continuation-in-part of Ser. No. 67,365, Aug. 27, 1970, abandoned. This application Dec. 14, 1970, Ser. No. 97,824

Int. Cl. F41b *5/02*

U.S. Cl. 273—106.5 C **16 Claims**

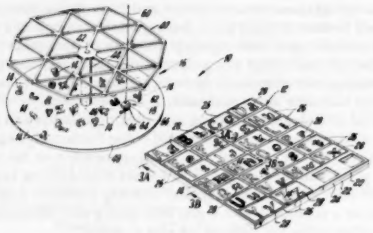


1. An arrow comprising: a shaft with a forward end and a rearward end, a plurality of vanes extending radially from a common axis, said vanes each being substantially planar, support means having an inward end secured to said shaft

adjacent said rearward end and extending outwardly from said shaft to said common axis to support said vanes in a position where said common axis is spaced outwardly from said shaft at a second end of said support means, said vanes being the sole vanes and disposed on one side of said shaft.

3,853,321
LETTER-NAME PERCEPTION AND DISCRIMINATION GAME APPARATUS

Bruce A. Claffie, 8 Hemlock Dr., Miller Place, N.Y. 11764
Filed Mar. 29, 1974, Ser. No. 456,228
Int. Cl. A63f *3/00*
U.S. Cl. 273—130 A **12 Claims**



1. A game apparatus for improving the letter-name perception and discrimination capabilities of a player comprising the combination of:

a game board having a plurality of cut-outs corresponding in configuration to the letters of the alphabet;

a plurality of letter pieces corresponding in configuration and size to said cut-outs in said board, each letter piece being at least in part made of a magnetically metallic material;

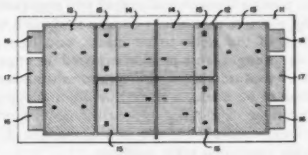
a grid structure means including a grid spaced from a platform by a post, with the letter pieces being initially placed on said platform; and

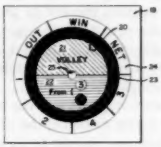
a magnetic pick-up device which is used by the player for engaging a letter-piece disposed on the platform and lifting same through the grid, after which the player inserts the letter piece in the corresponding cut-out in the game board.

3,853,322
BOARD GAME

Donald W. Mercer, Pittsburgh, Pa., assignor to Donbee Corporation, Pittsburgh, Pa.
Filed June 29, 1972, Ser. No. 267,399
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 ES **8 Claims**

1. In a board game simulating an athletic contest played on a playing field and including a board representing that playing field and spinner means for determining by chance the outcome of plays selected by a player of the game, the improvement comprising indicia and color on the board designating zones of the playing field occupied by the contestants during the course of the contest and a plurality of spinner cards each adapted to receive and releasably hold the spinner means and each having first indicia determining by chance with said spinner means the outcome of a play and each carrying second indicia independent of the first indicia the indicia and color of the second indicia on a given spinner board indentically corresponding to the indica and color on a given area of the playing field corresponding to the players assumed position on said

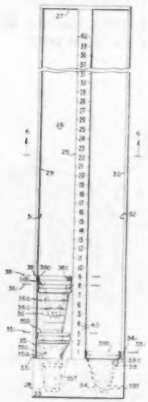




field. which associate that card with a pair of designated zones, one for each of the contestants.

3,853,323
CHESS SET WITH VISUAL MEANS FOR KEEPING A RUNNING SCORE

Henry Gifford, 184-51 Hovenden Rd., Jamaica, N.Y. 11432
Filed Dec. 10, 1973, Ser. No. 424,338
Int. Cl. A63f *3/02*
U.S. Cl. 273—137 R **9 Claims**



1. In a chess set, the improvement comprising visual means for keeping a running score in a chess game, said means including chess pieces having an engageable portion and a body portion,

said engageable portion including one end of a piece and having an engageable surface whose shape and size are the same from piece to piece, said body portion being of variable height from piece to piece,

an elongated member having a scale of unit values marked thereon the unit of which is equal to the body portion height of a pawn, said member receiving on each side thereof captured pieces in stacked form with the pieces

on one side being distinguishable from those on the other side, a support adjacent the bottom of the member having engageable means on either side of the member,

the first captured piece of one side in a chess game being engageable in one of said engageable means so that a plane passing through said end of said engageable portion of the piece is at a level opposite said scale to permit a reading of the scale to be made, said first piece thus having its engageable portion exposed for engagement by another captured piece, thereby permitting another scale reading to be made, and each additional captured piece of the same side being added in engaging relation to a previously captured piece in the manner described to provide additional scale readings,

each stacked piece having a height extending from the said end of the engageable portion thereof to the end of the engageable portion of the next engaging piece below the same which height is directly proportional to the point value of the piece in accordance with the following point value — body portion height relationship:

the point value of a pawn being one and the body portion height thereof being a unit distance, the point value of the queen, rook, bishop, and knight being a multiple of that of a pawn in accordance with any conventional point value system and the body portion heights of said queen, rook, bishop, and knight also being multiples of the pawn body portion height, and said last-mentioned multiples being the same as said first multiple,

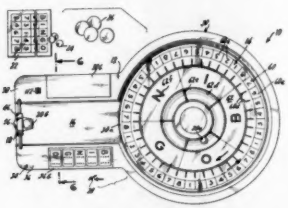
and said scale readings providing a running score of either captured pieces or on-board pieces as said chess game proceeds.

3,853,324

COMBINED GAME OF CHANCE AND SKILL

Lawrence L. Reiner, Hickory Ln., Woodbury, L.I., N.Y. 11797, and William A. Brady, 201 Cross St., Fort Lee, N.J. 07024

Filed Oct. 11, 1973, Ser. No. 405,469
Int. Cl. A63f *5/02*
U.S. Cl. 273—142 E **18 Claims**



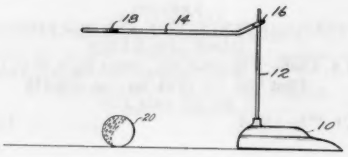
1. A combined game of chance and skill comprising a circular playing field, first and second indicating balls, means for propelling said first and second indicating balls onto said playing field, said playing field including a first rotatable member having first ball-receiving means adapted to receive a first indicating ball, a second rotatable member located between said first rotatable member and said means for propelling said balls, said second rotatable member having second ball-receiving means adapted to receive said second indicating ball, means located on one of said rotatable members for preventing passage of said second indicating ball and permitting passage of said first indicating ball into said first ball-receiving means and means for driving said first and second rotatable members.

3,853,325

GOLFER'S PRACTICE AID

Norman John Easterbrook, 94 Warrimoo Ave., Sydney, Australia (2075)

Filed June 5, 1973, Ser. No. 367,228
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 E **3 Claims**



1. A golf practice aid comprising:

a. an upright post secured at one end thereof to a base; and

b. a horizontal sight piece having a collar at one end and a circular golf ball sighting member at the other end thereof, said collar being directly disposed over and contacting said post so as to be releasably located thereon and slideable along said post,

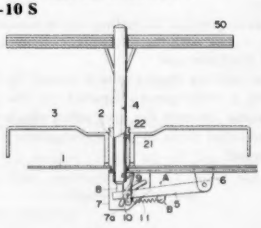
a bend provided intermediate said sighting member and said collar so that interior portions of said collar frictionally engage said post, thereby causing said sighting member to lie in a plane at substantially a right angle to said post, and the height of said post being such that said sighting member may be moved to a position above a golf ball during the execution of a golf club swing for sighting on said golf ball.

3,853,326

TURNTABLE ARRANGEMENT WITH AUTOMATIC RECORD CHANGER SPINDLE

Tomoo Atsumi, Osaka, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka-fu, Japan

Filed Oct. 17, 1972, Ser. No. 300,420
Claims priority, application Japan, Oct. 21, 1971, 46-83812; Oct. 21, 1971, 46-83813; Oct. 25, 1971, 46-84827; Oct. 21, 1971, 46-97830
Int. Cl. G11b *17/04*
U.S. Cl. 274—10 S **4 Claims**



1. A record changer spindle, comprising:

a spindle housing of tubular shape and having a plurality of apertures therein;

an inner hollow shaft;

means positioned within said spindle housing and operable in response to the sliding movement of said inner hollow shaft for alternately clamping and releasing a stack of records mounted on said spindle, said inner hollow shaft positioned within said housing and slidable between upper and lower positions, said shaft being coupled to said clamping and releasing means and having an engagement hole formed adjacent a lower end portion thereof, the position of the engagement hole being selected for being withdrawn into said housing when said inner shaft assumes its upper position and extending below said housing when said shaft assumes an intermediate position; and

means positioned adjacent the lower portion of said spindle housing, said means comprised of a lever member,

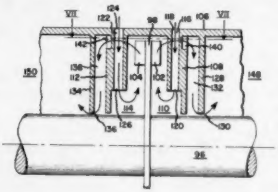
one end thereof being pivotally mounted and the other end being positioned beneath said spindle housing and adapted to move between upper and lower positions, said lever member normally assuming said upper position, an upwardly projecting support member positioned on said lever member adjacent the free end thereof and adapted to contact said inner hollow shaft for support thereof when said lever member is in the upper position, a hook member pivotally mounted on said lever member adjacent said support member, said hook member extending upwardly from said lever member, and a spring member operatively coupled to said hook member for biasing said hook member toward said support member, said hook member thereby contacting the lower portion of said housing when said lever assumes its upper position,

whereby downwardly pivoting said lever member terminates support of said inner shaft by said support member and said shaft moves downwardly and, when records are being supported, said shaft moves downwardly to said intermediate position such that said engagement hole extends from said housing, said hook member thereby engages said engagement hole and further downwardly moves said shaft and consequently operates said clamping and releasing means, whereby the lowermost record may be released from the stack.

3,853,327
SELF-PRESSURIZING SHAFT SEAL

Veeder C. Nellis, Swampscott, Mass., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 3, 1973, Ser. No. 403,164
Int. Cl. F16j *15/00*
U.S. Cl. 277—63 **11 Claims**



1. A self-pressurizing shaft seal for retarding the flow of lubricant through an annular passage defined by a lubricant deflector and a shaft wherein:

a. said shaft includes:

i. flange means mounted on said shaft, and

ii. blade means mounted on said flange means; and

b. said self-pressurizing shaft seal includes:

i. a stationary baffle wherein:

A. said stationary baffle and said shaft define an annular space, and

B. said blade means is disposed in said annular space, and

ii. conduit means for providing a fluid flow path into said annular space, said conduit means having:

A. a first end opening to the environment outside said stationary baffle, and

B. a second end opening inside said annular space and communicating with said annular space at a location radially inward of said blade means, and

iii. duct means for providing a fluid flow path out of said annular space, said duct means having:

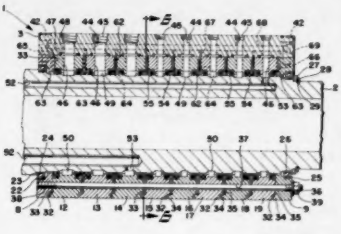
A. a first end opening inside said annular space and communicating with said annular space at a location radially outward of said second end of said conduit means, and

B. a second end opening to the environment outside said stationary baffle at a location proximate to said annular passage.

3,853,328
ROTARY SEAL

Ronald F. Pierce, Poland, Ohio, assignor to NRN Corporation, Akron, Ohio

Filed Aug. 27, 1973, Ser. No. 391,579
Int. Cl. F16j *15/32, 15/40*
U.S. Cl. 277—72 R **14 Claims**

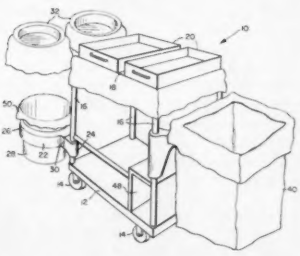


1. A rotary seal for transmitting fluid from a stationary manifold to a rotatable shaft comprising an annular section member with radially extending sides having a fluid passage extending from said manifold to said shaft, a pair of annular seals at opposite sides of said fluid passage for sealing the space between said annular section and said shaft, backing members at the sides of said annular section member overlapping said seals and said backing members having lubricating passages extending from said manifold to said seals for communicating lubricant to said seals.

3,853,329
SURGICAL SUPPLY CART

Robert Louis McDonald, Rochester, N.Y., assignor to Sybron Corporation, Rochester, N.Y.

Filed Aug. 23, 1973, Ser. No. 391,003
Int. Cl. B62b *3/00*
U.S. Cl. 280—47.35 **4 Claims**



1. A surgical supply cart capable of being loaded with supplies for use during a surgical procedure and then steam sterilized to sterilize both the cart and supplies, including a mobile base, a pluarlity of spaced upright support members on said base, and a top supported on said upright members, the improvement comprising:

a. a container support bracket including

i. a first portion pivoted to one of said upright members for movement in a horizontal plane; and

ii. a second, container supporting portion pivotally attached to said first portion for movement about a horizontal axis extending axially of said first portion,

said bracket capable of moving a container supported thereby on said first portion between a first position located outwardly from under said top and a second, inverted position located wholly beneath said top;

b. basin support means having one end pivotally attached to said cart beneath said top for movement in a vertical plane to move a basin supported thereby between a first position extending outwardly of said top to a second inverted stored position located wholly beneath said top; and

c. a linen bag support frame pivoted to another of said upright members for movement in a horizontal plane from a first position extending outwardly from said top to a second stored position located wholly beneath said top.

3,853,330
DEVICE FOR LOCKING A TOW BAR TOGETHER WITH A STEERING MEMBER

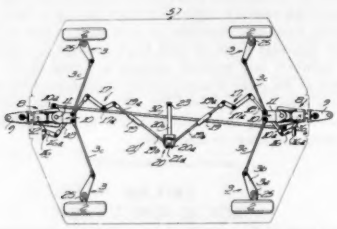
Hiroshi Hanaoka, Tokyo, Japan, assignor to Hanaoka Sharyo Company Limited, Tokyo, Japan

Filed Apr. 28, 1972, Ser. No. 248,578

Claims priority, application Japan, May 1, 1971, 46-29301; Oct. 30, 1971, 46-86582; Oct. 30, 1971, 46-101394; Oct. 30, 1971, 46-101395

Int. Cl. B62d *13/06*

U.S. Cl. 280—99 **6 Claims**



1. A device for locking a tow bar together with a steering member of running wheels in a trailer which is adapted to be incorporated with other trailers to form a train, characterized in that said locking device comprises a vertical set pin secured to the end portion of a trailer body, a steering member rotatably supported by said set pin and having a longitudinal slit, an engaging member rotatably supported by said set pin and rigidly connected with one end of a tow bar, said engaging member having a slit which involves a locking portion and a releasing portion, a slide member inserted into said slits so as to be engaged with said engaging member at said locking portion and disengaged from said engaging member at said releasing portion in connection with a circular direction in which said engaging member is rotated about said set pin, and means for automatically shifting said slide member from said locking portion to said releasing portion and vice versa, said shifting means having a caster supported under said trailer body rotatably around a vertical axis when said caster trails on the ground by traction power applied to the train of trailers.

3,853,331
INFLATABLE OCCUPANT RESTRAINT SYSTEM

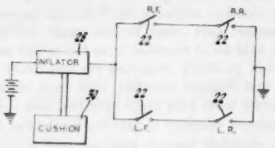
Trevor O. Jones, Birmingham, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 21, 1973, Ser. No. 427,341

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 AB **3 Claims**

1. In combination with a vehicle including a sprung body, an unsprung mass supporting the body, a plurality of extendible and retractable shock absorbers connected between the sprung body and unsprung mass and arranged in pairs along the respective sides of the sprung body, an occupant restraint system comprising, an inflatable occupant restraint cushion, means for inflating the cushion, means on each shock absorber sensing substantially full extension thereof, and control means responsive to the sensing means of one of the pairs of shock absorbers sensing substantially full extension of their



respective shock absorbers occurring upon roll-over separation of the sprung body and unsprung mass for actuating the inflating means to inflate the cushion.

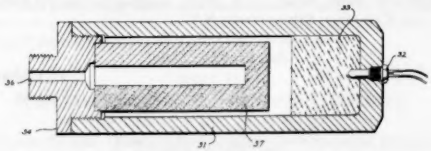
3,853,332
POROUS DIFFUSER FOR GAS SUPPLY TO PASSENGER RESTRAINT

Robert W. Lynch, Fountain Valley, Calif., assignor to Specialty Products Development Corporation, Oak Creek, Wis.

Filed Mar. 31, 1972, Ser. No. 240,035

Int. Cl. B60r *21/10*

U.S. Cl. 280—150 AB **4 Claims**



1. In an improved inflatable bag passenger restraint system comprising a gas pyrotechnic generating composition, an inflatable passenger restraint bag, a flow limiting orifice through which gas from the pyrotechnic composition passes before entering the inflatable bag, the improvement comprising a porous diffuser through which substantially all of the gas passes between the pyrotechnic composition and the flow limiting orifice in the form of a hollow cylinder having its exterior in fluid communication with the pyrotechnic composition and its inside in fluid communication with the flow limiting orifice, and having a sufficient mass to reduce the temperature of the gases from the pyrotechnic composition to less than about 200°F at a point where the gases enter the bag.

3,853,333
AUXILIARY SAFETY WHEEL

Joseph Sancho, and Willie Elliott, both of Newark, N.J., assignors to The Raymond Lee Organization, Inc., New York, N.Y., a part interest

Filed Sept. 12, 1972, Ser. No. 288,272

Int. Cl. B60r *27/00*

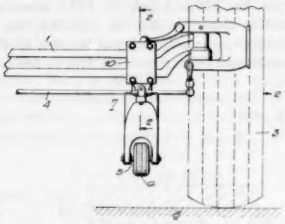
U.S. Cl. 280—150 A **3 Claims**

1. An auxiliary safety wheel device for a motor vehicle having an axle comprising substantially an I beam having spaced parallel flanges, a primary wheel having a specific diameter on the axle and an inflated tire on the primary sheel, said safety wheel device comprising

an auxiliary wheel of smaller diameter than the primary wheel; and

mounting means removably clamping the auxiliary wheel to the axle in proximity with the primary wheel in a manner whereby the auxiliary wheel is normally free from contact with the ground but comes into contact with the ground when the tire on the primary wheel is deflated, the mounting means comprising a pair of substantially E-shaped clamping members gripping the axle between them and a

pair of bolts securing the clamping members to the axle substantially astride the flanges of the axle, each of the clamping members having three projections spaced from



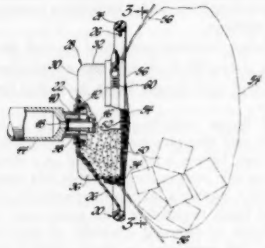
each other and clamping the axle in a manner whereby the flanges of the axle extend into the spaces between the projections.

3,853,334

OCCUPANT RESTRAINT SYSTEM

John T. Auman, Washington, and Robert L. Hodgson, Warren, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 11, 1972, Ser. No. 314,120
Int. Cl. B60n *21/08*
U.S. Cl. 280—150 AB **3 Claims**



1. An occupant restraint system for a vehicle comprising, in combination, encapsulating means mounted on the vehicle and including a rupturable outlet, a compressed mass of foam material within the encapsulating means, an expandable occupant restraint communicable with the encapsulating means through the rupturable outlet, a source of fluid for interacting with the mass of foam material to expand the foam material to substantially the uncompressed volume thereof by absorption of the fluid when the mass of foam material is released from the encapsulating means, means communicating the source with the encapsulating means, and means for rupturing the rupturable outlet upon communication of the source with the encapsulating means to release the mass of foam material for expansion by absorption of the fluid and for flow with the fluid to the restraint, the fluid and the expanded foam material within the restraint cooperatively absorbing the energy of impact forces upon occupant engagement with the restraint.

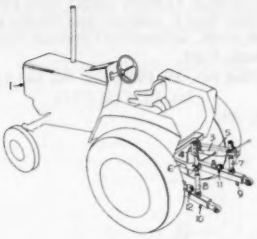
3,853,335

DRAFT ARM LATCH ASSEMBLY

Edward B. Heckenkamp, Brookfield, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 29, 1973, Ser. No. 410,907
Int. Cl. B60d *1/00*
U.S. Cl. 280—478 R **10 Claims**

1. In an extensible draft arm assembly of a tractor three-point hitch comprising, a lower draft arm assembly including a draft arm adapted for connection to a tractor and an extension link telescoping within the draft arm, the improvement comprising hook means on the end of said extension link defining a latch engaging surface, a latch on said draft arm for latching said extension link in a contracted position on said draft arm including a latch housing connected to said draft



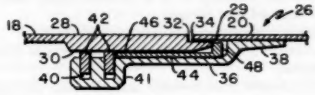
arm, a latch element pivoting about an axis normal to said draft arm, a latch handle connected to said latch element, resilient means selectively and alternatively positioned for resiliently biasing said latch element to a latched position engaging said hook means of said extension link and for retaining said latch in an unlatched position.

3,853,336

TELESCOPING EXPANSION JOINT FOR TUBULAR ELEMENT

Wayne C. Shank, Tucson, Ariz., assignor to Avco Corporation, Williamsport, Pa.

Filed Aug. 3, 1973, Ser. No. 385,540
Int. Cl. F16l *55/00*
U.S. Cl. 285—18 **5 Claims**



1. An expansion joint for sealing the connection between first and second tubular sections, said sections having equal inner diameters and being directly adjacent each other in assembled form, said expansion joint comprising:

a sleeve surrounding said sections at the junction thereof, said sleeve having an inner diameter greater than the outer diameter of said sections to form an annular chamber between said sections and said sleeve, one end of said sleeve being peripherally secured to one of said sections; an inwardly facing circumferential groove in said sleeve adjacent its other end;

a piston-type flexible ring received in said inwardly facing groove, said piston ring having an inner diameter less than the outer diameter of said other section so that the inner diameter of said piston ring sealingly engages the periphery of said other section when said sections are connected;

an annular assembly ring telescoped into said sleeve at said groove for expanding said piston ring into said groove, said assembly ring having an inner diameter greater than the outer diameter of said other section to permit said other section to be telescoped into said assembly ring; and

means defining an interference clearance between the end of said inner section and said assembly ring so that when said other section is telescoped into said sleeve, said section displaces said assembly ring axially clear of said

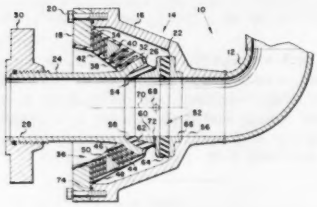
piston ring and into said annular chamber, thus permitting said piston ring to contract and sealingly engage said other section.

3,853,337

FLEXIBLE ELBOW JOINT FOR PIPES

John T. Herbert; Paul E. Sullivan, and Stanley P. Vitt, Jr., all of Redlands, Calif., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Feb. 25, 1974, Ser. No. 445,149
Int. Cl. F16l 27/10
U.S. Cl. 285—49 4 Claims



1. A flexible elbow joint for pipes comprising:

a 90° elbow subtended by identical flexure units, each unit comprising:

an annular housing with a central cavity and a centrally perforated end flange;

a nipple partially submerged in said cavity;

a spherically flared end on the submerged portion of the nipple;

a first annular, elastomeric seal assembly being disposed in said cavity and extending between the nipple end and the housing end flange and closing said cavity;

said first seal assembly being comprised of a first reinforced elastomeric element bonded to the exterior surface of the nipple end, a second reinforced elastomeric element bonded to the interior surface of the end flange, and an annular, rigid transition element between said first and sscond elastomeric elements, said transition element being bonded to said elastomeric elements;

a second annular, elastomeric seal assembly being disposed interiorly of said nipple end and bridging said nipple and said housing to provide a constant inside diameter for said flexure unit;

said second seal assembly being comprised of a first ring member resting against the housing, a ball member having a spherical surface complementary to the interior surface of the nipple end, a first elastomeric element bonded to said surfaces of the nipple and said ball member, and a second elastomeric element bonded to the ball member and the ring member;

said ball member having an opening to provide for fluid communication between the joint interior and the closed portion of the housing cavity;

said first elastomeric elements of the first and second seal assemblies having a common center of rotation in the central axis of the joint to provide omnidirectional flexure movement of said nipple with respect to said housing;

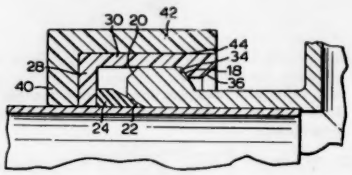
and said second elastomeric elements of the first and second seal assemblies being configured to provide for lateral movement of the nipple with respect to said housing.

3,853,338

COUPLING

William W. Wilson, Mississauga, Ontario, Canada, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 276,553, July 31, 1972, abandoned, which is a continuation-in-part of Ser. No. 210,283, Dec. 20, 1971, abandoned, which is a continuation of Ser. No. 35,636, May 8, 1970, abandoned. This application Jan. 7, 1974, Ser. No. 431,260
Int. Cl. F16l 21/04
U.S. Cl. 285—86 1 Claim



1. A coupling for connecting a first member telescoped within a second member comprising,

a connector slidably mounted on said first member and having a continuous skirt portion spaced from said member and extending from an end closure through which said first member passes in sliding relation towards an open end of said connector, a resiliently deformable first flange depending from said skirt portion inwardly towards said first member,

a second flange intergral with said second member and depending outwardly from said second member, the relative depths of said flanges being such that they overlap each other,

said second flange including an inclined surface which forms with said first member a wedge-shaped channel,

said first flange having a face inclined in a direction outwardly from said skirt portion towards said open end, said second flange having a face correspondingly inclined,

said inclined faces registering with each other when said second flange is disposed inwardly of said first flange relative to said open end, in which position said flanges overlap one another thereby inhibiting removal of said connector from engagement with said second flange, said inclined faces allowing the face on said first flange to ride up the inclined face on said second flange as said first flange resiliently deforms to aid removal of said connector from engagement with said second flange if sufficient opposed force is applied between the connector and the second member,

said first flange including a second inclined face whereby said first flange tapers towards said first member, and said second flange has a further inclined face inclined correspondingly to said second face on said first flange whereby said second flange tapers away from said second member,

a rigid cover member slidably mounted on said first member, said cover member including a skirt portion extending from an end closure through which said first member passes in sliding relation towards an open end of said cover member,

said cover member overlying and engaging said connector, the inner surface of said skirt and end closure of said cover member engaging the outer surface of said skirt and end closure of said connector respectively, thereby inhibiting removal of said connector from engagement with said second flange without removal of said cover member, and

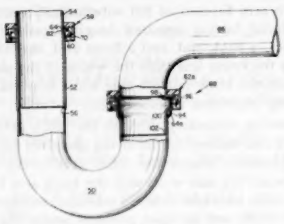
wedge-shaped sealing material wedged in said wedge shaped channel between said first and second members and held in position by engagement with the inner wall of

the end closure of said connector and through the connector holding the flanges in engagement.

3,853,339
COUPLING

William W. Wilson, Mississauga, Ontario, Canada, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 276,553, July 31, 1972, abandoned, which is a continuation-in-part of Ser. No. 210,283, Dec. 20, 1971, abandoned, which is a continuation of Ser. No. 35,636, May 8, 1970, abandoned. This application Jan. 23, 1974, Ser. No. 435,819
Int. Cl. F16l *21/04*
U.S. Cl. 285—157 **3 Claims**

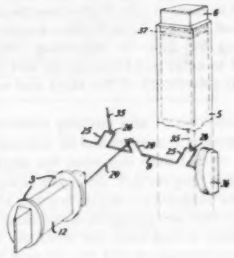


1. A coupling assembly for connecting first and second tubular members together comprising a first shaped end section formed integrally on said first member and including a first annular wall flange and a wall portion axially spaced from said wall flange and extending axially and radially inwardly from said wall flange and terminating in a tubular open end of said first member, a second shaped end section formed integrally on said second member and including an enlarged wall portion extending radially outwardly from the normal flow passage of said second member and terminating in a second flange at the open end of said second member, said enlarged wall portion of said second member telescopically receiving said wall portion of said first member with said tubular end of said first member slidably received within the normal flow passage of said second member, said first and second flanges being sized to axially abut each other and a circumferential portion of said first shaped end section between said wall flange and said tubular end sized to abut an annular interior portion of said second shaped end section, a flexible sealing ring provided exteriorly of said tubular end of said first shaped end section, and a connector having an end closure axially slidably movable along said first member into abutment with the rear side of said first flange to move said first flange and said circumferential portion of said first shaped end section into abutment with said second flange and said annular interior portion of said second shaped end section respectively, and to move said sealing ring into a channel defined between said axially and radially extending wall portion and said enlarged wall portion, said connector having an axial skirt portion extending from said end closure axially beyond said first flange towards an open end of said connector, said skirt portion having a locking flange extending radially inwardly towards said end section of said first member, the relative radial depths of said locking flange and said second flange being such that they overlap each other, said connector being an integral annulus of relatively stiff plastic material which is capable of sufficient radial flexure to enable said locking flange to expand and pass over said second flange under a manually applied axial force and then relax into an interlocking position in which said locking and second flanges inhibit relative axial displacement of said connector away from said second flange and maintain said first and second members connected together with said sealing ring compressed between said wall portion of said first member and said enlarged wall portion of said second member.

3,853,340
DOOR LOCK

Soren Christian Schoubye Arfelt, Ebberup; Ib Christian Clausen, Allested; Johannes Jensen, Odense; Knud Hansen Fynbo, and Jean Arnold Fischer, both of Hjallese, all of Denmark, assignors to Daempa A/S, Knarreborg, Denmark

Continuation of Ser. No. 340,583, March 12, 1973, abandoned. This application Feb. 11, 1974, Ser. No. 441,601
Claims priority, application Denmark, Mar. 20, 1972, 1300/72
Int. Cl. E05b *55/00*; E05c *1/16*
U.S. Cl. 292—165 **9 Claims**



1. A lock for a door or the like, comprising in combination a bolt urged against an engaged position,

gripping means adapted to be mounted on a side of the door and including an elongated housing adapted to be secured to and in spaced relation to the door,

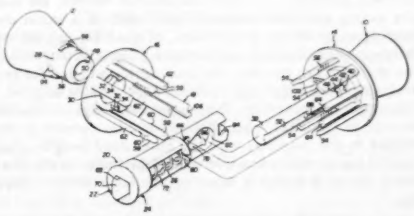
press means operatively connected to said bolt and being carried by said housing for movement relative thereto, and

separate operating means having first and second positions, said first position permitting normal movement of said press means and said second position causing said press means to be located in a displaced condition relative to said housing.

3,853,341
DOOR LATCH SET

Robert D. MacDonald, Metamora, Mich., assignor to Cardinal of Adrian, Inc., Dryden, Mich.

Continuation-in-part of Ser. No. 227,407, Feb. 18, 1972,. This application Jan. 18, 1973, Ser. No. 324,604
Int. Cl. E05c *1/12*
U.S. Cl. 292—171 **9 Claims**



1. In a door latch set for use in a door having a face-to-face rotor receiving through hole and an edge-opening latch bolt receiving blind hole perpendicularly intersecting said rotor hole, and wherein a latching element reciprocates within the latch hole between latched and unlatched positions upon

rotation of either of two rotors rotably mounted in and at opposite ends of the rotor hole;

the improved means for keying said two rotors for simultaneous rotation and for interlockingly coupling said latching element to said rotors so that it will respond to such rotation; comprising:

an elongated shaft extending coaxially from a first of said rotors for rotation therewith and adapted to extend at least halfway through the rotor hole, said shaft being provided with an elongated exposed open ended side slot extending longitudinally from its inner end towards said rotor, at least a portion of the length of said slot being undercut so that the side opening of said slot is narrower than the base thereof;

the second rotor having a coaxial bore at its inner end adapted to receive said shaft when the latch set is assembled, said second rotor further having a longitudinally extending key-like rib projecting into said bore and adapted to enter and fit snugly in said shaft slot on axial assembly movement of the shaft and second rotor relatively;

the innermost tip of said latching element being enlarged and shaped so as to enter and be received in said undercut portion of said shaft slot when the shaft is slid axially in a relative longitudinal direction towards said second rotor, the enlarged tip of said latching element within the undercut slot preventing its withdrawal from said undercut portion of said shaft slot when the shaft is rotated;

said interconnection of said rib and said shaft causing said rotors to be keyed and to rotate together upon rotation of either one, and such rotation causing longitudinal movement of said latching element within the latch hole of the door.

3,853,342

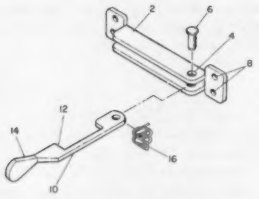
DOOR RETAINER LATCH

Robert Alfred Merrick, 743 S. Bryant St., Denver, Colo.

Filed May 14, 1973, Ser. No. 359,797

Int. Cl. E05c *17/04*

U.S. Cl. 292—262 **1 Claim**



1. A door retainer latch device intended for use on a trailer, mobile home, recreational vehicle, and the like having an entryway providing access to the interior thereof, the entryway having an outer entryway door, such as a storm door, panel type protective travel door, or the like, and an inner entryway door provided for permitting the selective entrance into the trailer or the like, the latch device adapted for selectively engaging a top edge, bottom edge, or side edge of the outer door furthest from the hinged side edge thereof in a manner to latch the outer door in a fully opened position relative to the entryway with the outer door lying in spaced parallel juxtaposition to a side wall of the trailer or the like on which the latch device is mounted, the latch device comprising:

a longitudinally elongated channel shaped body portion having a U-shaped cross-section, the body portion including parallel vertically spaced apart horizontally extending side walls, each side wall having a back side edge, a front side edge, and opposed end edges;

a pair of flat rectangularly shaped mounting members, each mounting member affixed to one end of the side walls normal to the plane thereof and extending outwardly from its associated end in a wing-like manner, each mounting member being substantially co-planar with the plane defined by the bottom edges of the side walls;

a pair of mounting holes disposed in each mounting member and extending completely therethrough adapted to receive mounting means for affixing the mounting members and interconnecting channel shaped body portion to a side wall of the trailer or the like;

a hole disposed in one end of each body portion side wall and extending completely therethrough, the holes being in axial alignment with each other;

a pivot pin member including a cylindrical shank of a diameter to be axially inserted through the aligned holes in the body portion side walls bridging the slot gap therebetween;

a latch arm formed of flat substantially rectangular stock material having opposed longitudinally extending side edges, a back end, and a front end, the latch arm being of a thickness less than the width of the slot formed between the body portion side walls to permit free receipt of the latch arm therebetween;

an opening extending through the latch arm adjacent the back end thereof for receiving the pivot pin therethrough to pivotally mount the latch arm to the body portion between the side walls with the latch arm being pivotally movable between a closed position received between the side walls and an open position projecting outwardly of the front edge of the side walls;

a handle member formed integrally with the front end of the latch arm and projecting outwardly therefrom, the handle disposed in a plane extending normal to the plane of the latch arm and adapted to be readily gripped by an individual's hand when the latch arm is completely received between the side walls in its closed position with the handle portion projecting longitudinally outwardly of the adjacentmost end edge of the side walls in a manner parallel to the wing-like mounting members;

a rectangularly shaped recess provided in the latch arm along the side edge thereof adjacentmost the back edge of the body portion side walls when the latch arm is in the closed position, the recess being of a size and configuration adapted to engage therein an edge of the outer door; and

a coiled spring disposed concentrically about the pivot pin and having one end affixed to the body portion side walls and having its opposite end in engagement with the latch arm for resiliently biasing the latch arm into the closed position, the opening of the latch arm serving to tension the spring such that upon release of the latch arm the spring tends to bias the latch arm into the direction of its closed position.

3,853,343

BURGLARPROOF CHAIN GUARD

Robert E. Hunter, Spokane, Wash., assignor to Continental Lektroniks Corp., Spokane, Wash.

Filed Apr. 16, 1973, Ser. No. 352,050

Int. Cl. E05c *17/36*

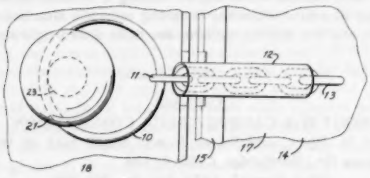
U.S. Cl. 292—264 **1 Claim**

1. A burglarproof chain guard for a door mounted within a building wall for hinged movement into a room and having an enlarged doorknob on a reduced support stem facing toward the room, comprising:

a stationary anchor embedded into the framework around the door opening within the room and adjacent to the doorknob when the door is closed;

a metal ring having an inside diameter slightly greater than the doorknob diameter to enable the ring to be passed over the doorknob and rest upon the stem thereof;

a chain interconnecting the anchor and ring, the length of the chain being just adequate to permit the ring to pass over the doorknob when the door is closed; and



a straight cylindrical steel sleeve enclosing substantially the entire length of the chain within the sleeve and freely rotatable on the chain.

3,853,344

IMPACT ABSORBING BUMPER SYSTEM

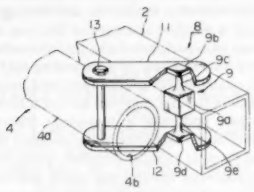
Hideo Shimoe, Tokyo, Japan, assignor to Nissan Motor Company Limited, Yokohama, Japan

Filed Nov. 16, 1972, Ser. No. 307,233

Claims priority, application Japan, Nov. 16, 1971, 46-107173

Int. Cl. B60r *19/04*; F16f *1/16*

U.S. Cl. 293—84 **1 Claim**



1. An impact absorbing bumper system for a wheeled vehicle which has an end cross member, and at least one side frame extending from the end cross member inwards and substantially longitudinally of the vehicle comprising:

a bumper outside the end cross member; a retractable strut integrated with said bumper and extending from said bumper through the end cross member inwards and substantially longitudinally of the vehicle; and mounting means, which comprises a torsion bar embedded in the side frame, for mounting said retractable strut on said side frame, resisting an impact force transmitted from said retractable strut upon a collision of the vehicle with a solid barrier at low-intermediate speed and converting a portion of an impact transmitted from said retractable strut to a torsion energy of said torsion bar upon a collision of the vehicle with a solid barrier at high speed, said mounting means further comprising two arms integrated wih said torsion bar and extending from upper and lower ends of said torsion bar to said retractable strut for holding said retractable strut therebetween; and fastening means for fastening said two arms to said retractable strut, said mounting means further comprising a block built in said side frame, in which block said torsion bar is embedded, and said torsion bar still further comprising a central portion having a square cross-section; an upper end having a square cross section; a rod portion interconnecting said central portion and said upper end; a lower end having a square cross-section; and a second rod portion interconnecting said central portion and said lower end, and wherein said torsion bar is embedded at the central portion thereof in said block built in said side frame.

3,853,345

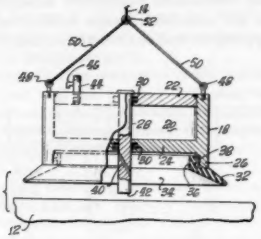
SUCTION GRIPPING DEVICE

Donald Miller, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 30, 1973, Ser. No. 420,404

Int. Cl. B66c *1/02*

U.S. Cl. 294—64 R **9 Claims**



1. A suction device for gripping an object comprising:

a container which has a compartment which is capable of withstanding a vacuum relative to ambient pressure;

a plunger slidably and sealably extending through the wall of said container;

elastomeric means mounted to the exterior of the container about said plunger for forming a chamber about the plunger;

the elastomeric means having a periphery which lies in a plane and is capable of making sealing engagement with said object;

said elastomeric means being resilient so that after the periphery of the elastomeric means makes engagement with the object the container can be pushed toward the object a distance during which the periphery of the elastomeric means maintains sealing engagement with the object;

said plunger extending beyond the container so as to be capable of engaging the object and sliding toward the vacuum compartment when the elastomeric means is pushed against the object; and

said plunger having a passageway for communicating the chamber with the vacuum compartment when the plunger is slid toward the compartment;

said passageway communicating the chamber with the vacuum compartment only after the periphery of the elastomeric means makes sealing engagement with the object; whereby upon pushing the elastomeric means against the object a vacuum is established in the chamber and the object is gripped by said device.

3,853,346

CRANE BUCKET EQUIPMENT

Raymond O. Jobst, 1476 Trotwood Ave., Mississauga, and William A. Perry, 28 Lewin Cres., Ajax, Ontario, both of Canada

Division of Ser. No. 178,005, Sept. 7, 1971, Pat. No. 3,780,880. This application Nov. 7, 1973, Ser. No. 413,668

Int. Cl. B67c *3/34*

U.S. Cl. 294—72 **5 Claims**

1. Hydraulic opening means for a container normally suspended comprising:

an actuating hydraulic cylinder;

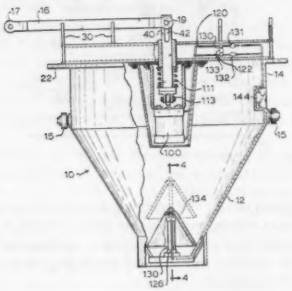
an actuable reversible hydraulic device connected to control the opening and closing of said container,

a pair of hydraulic lines connecting the hydraulic cylinder on opposite sides of the piston therein to a control valve and a pair of hydraulic lines connecting the control valve to the hydraulically actuable device,

said control valve being designed to connect said hydraulic cylinder to said device in one sense or in the reverse sense, or to disconnect said hydraulic cylinder from said device.

said container opening control being designed so that flow to said actuable device in one sense causes opening of said container and flow to said actuable device in the other sense causes closing of said container.

said actuating hydraulic cylinder being connected to form part of the mechanical connection between said container and the suspension means therefor, said connection being designed and constructed so that the weight of



the suspended container tends to move the actuating piston and cylinder relative to one another to tend to move hydraulic fluid in said lines.

whereby: with the control means disconnecting the actuating and the actuable devices, the container may, while suspended, be maintained in its closed or open states; with the control means connecting the actuating and actuable device in one sense, and the device suspended by the suspension means, the actuable device opens the container; with the control means connecting the actuating and actuable device in the other sense the actuable device closes the container.

3,853,347

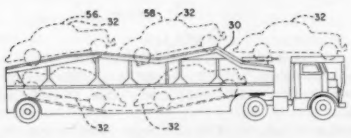
VEHICLE FOR CARRYING OTHER VEHICLES AND ITS TIE-DOWN SETUP

Billy E. Harold, Bethlehem, Pa., assignor to Bethlehem Fabrications, Incorporated, Bethlehem, Pa.

Filed Aug. 3, 1972, Ser. No. 277,496

Int. Cl. B62d *39/00*

U.S. Cl. 296—1 A **1 Claim**



1. A motor-vehicle-carrying trailer having a frame and a track mounted on the frame and a portion of the track toward the rear of the trailer at a higher level than the rest of the track, a plate mounted on this higher portion of the track and extending slopingly downward in an inward direction from that mounting, walls forming elongated holes in the plate, a winch mounted on the trailer, a flexible member adapted to be pulled by the winch and having a fastening means to fasten it to a motor vehicle being carried by the trailer at the other end of the flexible member, and means riding on the flexible member at a point intermediate between the point of attachment to the winch and the fastening means and having a hook adapted to fit into an elongated hole in the plate at a time when the flexible member and its fastening means are not attached to a vehicle, and to be held crosswise of that elongated hole without capability of turning from that crosswise position at a time when the fastening means is attached to a vehicle and the flexible member has been drawn tight by the winch.

3,853,348

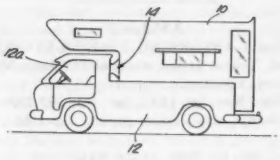
BOOT FOR CAMPER-TRUCK COMBINATION

Robert M. Bjork, and Steven Robert Bjork, both of 10901 Topeka Dr., Northridge, Calif. 91324

Filed June 12, 1973, Ser. No. 369,300

Int. Cl. B60p *3/32*

U.S. Cl. 296—23 MC **3 Claims**



1. A boot assembly intercoupling the forward end of the camper to the rear end of a truck cab, and having a forward end extending into a window aperture in the rear wall of the cab and supported in a peripheral channel extending around said aperture, and having a rear end extending into a window aperture in the forward wall of the camper, said boot assembly comprising: a flexible tubular member having a first open end and a second open end; and a two-piece frame member formed of a pair of rigid U-shaped wires encased in said first open end of said flexible tubular member, each of said rigid wires extending half-way around the open end of the said tubular member so that the ends of the two wires are adjacent to one another, said wires being contoured to fit into the peripheral channel of the window aperture in the rear wall of the cab with the adjacent ends of the wires forming diametrically opposite hinge joints for the first open end so that said frame member may be snapped into the annular channel.

3,853,349

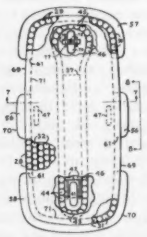
LIGHT-WEIGHT, WRECK-RESISTANT VEHICLE

Alvin Edward Moore, Manini Way, Diamondhead, Rt. One., Bay St. Louis, Miss. 39520

Filed Sept. 15, 1972, Ser. No. 289,478

Int. Cl. B62k *11/00*

U.S. Cl. 296—28 R **25 Claims**



1. A vehicle, adapted to travel over land, including:

body structure comprising: at least four elongated, fastened-together, body-sidewall can-rows, each of which includes a plurality of aligned cans having substantially parallel

axes that extend across the length of the row, each pair of said cans being in contact with each other at contiguous side portions and free of contact with sides of cans of other sidewall rows, and means for fastening the cans of each row together comprising at least one elongated, apertured strip of row-strength-providing material, lying on and across ends of the parallel-axes cans of the row, and means extending thru holes in said strip for fastening the strip and said can-ends together, at least one of the said strips being located between each adjacent pair of the can-rows, the said body structure further including: means, fixed to said strips, for fastening the can-rows together in sidewall framework on each side of the vehicle; forward and rearward end-wall frameworks, comprising tubular members; means fastening said end-wall tubular members to said sidewall rows; top framework, comprising tubular members; means fastening said top framework to portions of said sidewall rows; deck framework, comprising tubular members; means fastening said deck framework to portions of said sidewall rows; skin means, sheathing the said sidewall, top and deck frameworks; and gaseous material within each of said cans and tubular members;

front wheel-supporting means on said body structure, pivotal for steering, comprising bearings and bearing-support means connected to portions of said frameworks; rear wheel-supporting means on said body structure, comprising rotary wheel bearings and bearing-support means; and

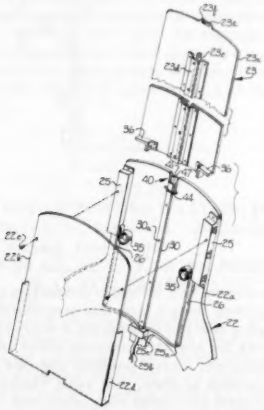
wheels supported by said front and rear wheel-supporting means.

3,853,350

ADJUSTABLE HEADREST AND BACKREST FOR A CHAIR

Dennis Frank Leffler, Charlotte, N.C., assignor to Pelton & Crane Company, Charlotte, N.C.

Filed May 17, 1973, Ser. No. 361,241
Int. Cl. A47c *1/10, 7/12, 7/36*
U.S. Cl. 297—404 **10 Claims**



1. In a treatment chair including a seat portion and a tiltable, upwardly-extending backrest for reception and positioning of a patient in a variety of positions for treatment by an operator; the improvement of a headrest assembly telescopingly carried by said backrest for adjustment to desired positions for different size patients and characterized by providing support to the shoulder area of a patient and counterbalanced adjustment mechanisms for ease in adjustment thereof to any desired position; said headrest assembly comprising:

a continuous, generally rectangular, relatively thin, body portion of substantial width at least one-half but less than the width of said backrest for providing a continuous support for the shoulder and head areas of a seated patient while allowing easy access to the head of the patient by an operator;

means contained within said backrest defining a longitudinally-extending, open-topped, relatively wide passageway for telescoping reception of said headrest body portion through the top of said backrest for longitudinal adjustment of said headrest body portion therein and outwardly thereof to desired positions;

counterbalance means positioned within said passageway in engagement with said headrest body portion biasing said body portion generally upwardly and outwardly of said backrest and counterbalancing the weight of the said body portion for ease in adjustment thereof to any desired position; and

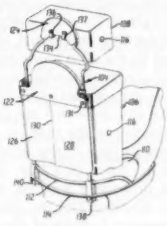
friction locking means carried by said backrest for frictional engagement with said headrest body portion when said body portion is placed in any desired position for locking said headrest assembly in such position and being releasable for unlocking said headrest assembly when adjustment thereof is desired.

3,853,351

MOTORCYCLE BACKREST

Wilbert A. Lassiter, 835 S. Frederick St., Apt. 632B, Arlington, Va. 22204

Filed Mar. 29, 1974, Ser. No. 456,249
Int. Cl. A47c *7/02;* **B62j** *1/28*
U.S. Cl. 297—452 **3 Claims**



1. An operator backrest for a motorcycle saddle comprising:

A. an elongated rigid backrest frame;

B. means for attaching one end of said frame to a motorcycle saddle in an essentially vertical orientation relative to the saddle;

C. a backrest cushion sized to conform to the back of a rider;

D. said cushion including:

i. an inner block of resilient material; and

ii. an outer cover over said inner block;

E. attachment means for flexibly and reversibly attaching said cushion on said frame including:

i. a downwardly open frame pocket on the rear surface of said cover engageable over the top of said frame and mounting said cushion on said frame;

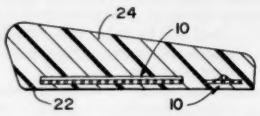
ii. inwardly extending flaps attached to vertical rear side edges of said cover on said inner block engageable around vertically disposed portions of said frame; and

iii. means securing the inner edges of said flaps one to another for taut and laterally moveable engagement of said cover on said frame; Whereby said back cushion is moveable laterally of said frame to accommodate leaning of a rider on said cushion and said cushion being reversible from front to rear on said frame by reversing the mounting of said attachment means on said frame.

3,853,352
SEAT BUN FASTENING STRIP

Jere B. Ambrose, West Bloomfield, Mich., assignor to Northern Fibre Products Corp., Birmingham, Mich.

Filed Oct. 23, 1973, Ser. No. 408,546
Int. Cl. A47c 7/02
U.S. Cl. 297—452 **2 Claims**



1. A fastening strip for resilient, molded plastic cushions, such as molded foam-plastic seat buns and the like, for fastening such cushions to other objects, such as to a seat spring-type support structure or a cloth-like upholstery covering material applied upon said cushion, comprising:

a long, narrow strip, formed of an open lattice-like, wide mesh made of thin, transversely arranged, coplanar strands joined together at their points of intersection;

each joint formed by the intersections of crossing strands being slightly enlarged transversely out of the plane of the strip for thereby interlocking with the plastic material forming the cushion;

a relatively stiff, wire-like rod extending along the lengthwise direction of the strip at about the center of the strip roughly perpendicular to some of and parallel to the remaining of said mesh strands; and

means securing said rod upon a face of the strip;

said securing means comprising a narrow cloth-like tape extending the length of the strip and overlapping the rod and a portion of the strip at opposite sides of the rod, with the tape secured to the strip along opposite sides of the rod by means of a row of stitches arranged at each side of and adjacent to the rod and extending through the tape and engaging the strands which are roughly perpendicularly arranged relative to the tape, so that the rod is held in place between the face of the strip and the tape;

said rod being in the form of a thin, relatively stiff wire, covered with a protective wrapper frictionally gripped against the strip strands which are overlapped by the rod and also the adjacent surface of the tape, with the rod being otherwise substantially free of securement to the strip and tape;

whereby the strip may be completely embedded within and at a short distance beneath an exposed surface of a cushion during the molding of such cushion, with the rod being inwardly of the strip relative to the cushion exposed surface, so that ring-like fasteners may be partially extended into the cushion to engage around the rod for anchoring thereto, with fasteners extending outwardly of said cushion surface for fastening to an object to be secured to said cushion.

3,853,353
METHOD OF EXTRACTING A METAL FROM A MATERIAL CONTAINING THE METAL IN ELEMENTAL FORM

Robert E. Cech, Scotia, N.Y., assignor to Copper Range Company, New York, N.Y.

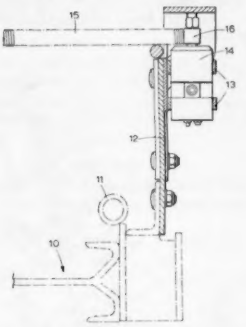
Division of Ser. No. 134,412, April 15, 1971, Pat. No. 3,775,097. This application Apr. 30, 1973, Ser. No. 355,569
Int. Cl. E21c 41/14
U.S. Cl. 299—2 **3 Claims**

1. A method of recovering a copper metal in a substantially closed environment from a material selected from the class consisting of copper ore tailings and copper scrap, said material containing said copper metal coated with a film including a copper compound selected from the class consisting of the oxide and the carbonates, said process comprising the steps of heating said material to a temperature in the range of 50°C to 100°C, reacting said film with an ammonia containing fluid to develop a film of an ammine complex of said copper metal on the surface of said copper metal, contacting said material with chlorine vapor, said film of ammine complex acting to transport the chlorine to the surface of said copper metal to provide a rapid chlorination of said copper metal and to form chloride salts of said copper metal, removing said chloride salts from said material, and recovering said copper metal from said salts, said material being located beneath ground within a mine, said mine being initially sealed off to provide a substantially air-tight enclosure, said ammine complex being developed by contacting the material with an ammonia-containing vapor; said ammonia-containing vapor being selected from the group consisting of ammonia gas, vaporized ammonium hydroxide and vaporized ammoniated ammonium carbonate liquor, said chloride salts being removed from said material by leaching with an aqueous leaching solution, said leaching solution being selected from the group consisting of ammoniated ammonium chloride, ammoniated sodium chloride, ammoniated ammonium carbonate, and mixtures thereof, said leaching solution being provided in part by steam.

3,853,354
DUST SUPPRESSION SPRAY VALVE CONTROL FOR LONGWALL MINING

Walter Weirich, Dortmund; Wolfgang Schwandt, Altlunen, and Willy Heyer, Bochum-Gerthe, all of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Wethmar bei Lunen, Westfalia, Germany

Filed Apr. 30, 1973, Ser. No. 355,369
Claims priority, application Germany, Apr. 29, 1972, 2221272; Nov. 16, 1972, 2256232
Int. Cl. E21c 35/22
U.S. Cl. 299—43 **23 Claims**



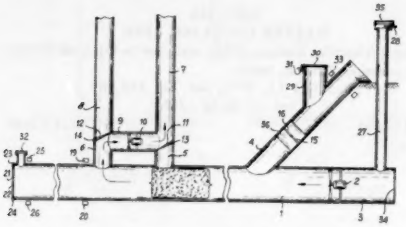
1. A spray control unit for use in connection with a mining machine travelling along a face, said control unit comprising a housing having inlet and outlet ports; a rotary valve mounted in said housing for angular movement about an axis from a neutral position into second positions disposed one on each side of the neutral position, said valve blocking fluid flow between said inlet and outlet ports when said valve is in its neutral position and permitting such flow when said valve is in either of its second positions; means biasing the valve towards its neutral position; means for delaying the movement of the valve under the action of the biasing means; and an elongate feeler operatively connected with the valve and being swingable about the valve axis, the feeler being adapted to project into the path of the mining machine for deflection thereby in one or other direction depending upon the direction of movement of the mining machine along the face, and to displace the valve during such deflection into one of said second positions.

3,853,355

METHOD AND DEVICE FOR DISCHARGING RUBBISH AND WASTE THROUGH PNEUMATIC DUCTS

Marcel Buisson, Chartres, France, assignor to Societe d'Etudes et Realisations de Complexes Industriels Divers Impasse des Ventes Marsauceux, Dreux, France

Filed Feb. 22, 1973, Ser. No. 334,890
Claims priority, application France, Feb. 24, 1972, 72.06208; Oct. 19, 1972, 72.37013
Int. Cl. B65g *51/08*
U.S. Cl. 302—2 R 15 Claims



1. Apparatus for disposing of materials packed in bags and the like, said apparatus comprising a main duct having opposite ends, a fan in said main duct, at least one infeed duct opening into the main duct downstream of said fan, a single gate located at one of said ends of the duct and serving as an outlet, said duct being completely open and non-obturated between said fan and said gate, said gate opening outwards and being constantly urged to a closed position, a non-return valve coupled to said main duct to connect said main duct to the atmosphere, said nonreturn valve being disposed in the immediate vicinity upstream of said outlet of the main duct, and at least one propulsive means coupled to said main duct at a location between said infeed duct and said outlet for producing suction in said main duct to promote advance of the material in said main duct until the material reaches said propulsive means whereupon said propulsive means produces pressure in said main duct to urge the material further downstream towards said outlet concurrently with the pressure of said fan.

3,853,356

METHOD OF PUMPING WAXY CRUDE OIL

LaVaun S. Merrill, Jr., Englewood, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Aug. 23, 1973, Ser. No. 390,837
Int. Cl. F17d *1/00*; B65g *53/04*
U.S. Cl. 302—66 14 Claims

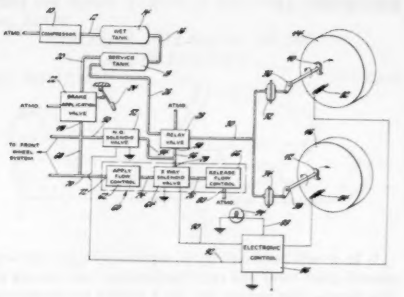
1. An improved process of transporting a hydrocarbon mixture that contains at least about 25 percent wax (this wax is defined as the precipitate which forms after 1 part of the hydrocarbon mixture is dissolved in 10 parts of methylethyl ketone at 80°C. and the mixture chilled to −25°C.), the improved process comprising fractionating the hydrocarbon mixture into at least a low pour point fraction, a medium pour point fraction, and a high pour point fraction, substantially congealing at least a portion of the medium pour point fraction and optionally a portion of the high pour point fraction, admixing at least a portion of the high pour point fraction with the low pour point fraction and thereafter slurrying the congealed particles with the low pour point fraction to obtain a hydrocarbon slurry suitable for transport at predetermined temperatures.

3,853,357

VEHICLE PILOT PRESSURE CONTROLLED BRAKE SYSTEM WITH WHEEL LOCK CONTROL MODULATING MEANS

Alan L. Hitzelberger, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 4, 1973, Ser. No. 393,734
Int. Cl. B60t *8/12*
U.S. Cl. 303—21 F 4 Claims



1. In a fluid pressure actuated brake system for a vehicle, said system having:

a fluid pressure source,

brake means for wheels of the vehicle selectively actuated and released by fluid pressure from said source,

brake application valve means receiving fluid pressure from said source and controlled by the vehicle operator to generate pilot pressures in accordance with the amount of braking desired,

relay valve means receiving said pilot pressures and connecting the pressure source and the brake means and controlling the application and release of fluid pressures to and from the brake means in accordance with the pilot pressures received,

and wheel acceleration and deceleration sensing and signal generating means sensing brake effectiveness and specifically incipient wheel lock, said sensing and generating means generating wheel lock control signals accordingly, the improvement comprising:

a normally open valve fluidly intermediate said brake application valve means and said relay valve means to transmit pilot pressures therebetween,

first means receiving signals from said sensing and generating means and closing said normally open valve when the signals indicate incipient wheel lock,

an apply flow control valve and a three-way valve connected in fluid series relationship and in parallel fluid relationship with said normally open valve, said three-way valve being also connected to exhaust,

and second means receiving signals from said sensing and generating means and acting on said three-way valve closing the fluid connection between said apply flow control valve and said relay valve means concurrently with the initial closing of said normally open valve, and also opening a fluid connection through said three-way valve from said relay valve means to exhaust to cause the pilot pressure acting on said relay valve to decrease independently of said brake application valve means,

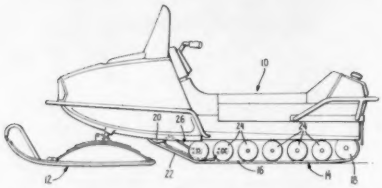
said second receiving means receiving further signals from said sensing and generating means upon sufficient wheel acceleration and acting to reverse the action of said three-way valve so that said relay valve means receive pilot pressures through said apply flow control valve which controls the rate of pilot pressure increase to the pilot pressure generated by the brake application valve means to increase the fluid pressure to the brake means accordingly, the action of said second receiving means on

said three-way valve being repeated as signals again indicate incipient wheel lock.

3,853,358
SLIDE RAIL

Jack H. Rose, Livonia, Mich., assignor to Massey-Ferguson Inc., Detroit, Mich.

Filed June 11, 1973, Ser. No. 368,551
Int. Cl. B62d *55/08*
U.S. Cl. 305—24 **11 Claims**

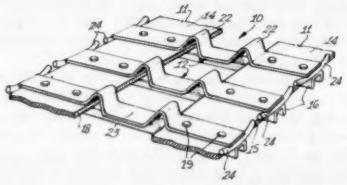


1. In a vehicle driven by a continuous track passing over spaced apart front and rear track wheels and having suspension means intermediate the track wheels for maintaining the track in engagement with the terrain, where the front track wheel is positioned to form a section of track inclined upwardly between the front track wheel and the suspension means in the direction of the front track wheel, at least one slide rail comprising: a forward part and rearward part connected to the suspension means, said forward part generally parallel to and extending over substantially the entire length of the inclined section of track and extending longitudinally from the suspension means toward the front track wheel and said rearward part extending toward said rear track wheel, said slide rail normally spaced apart from the track but providing support to the track by urging the inclined section to compact terrain contacted thereby providing a packed surface for the remainder of the track.

3,853,359
VEHICLE TRACK

Allen A. Pusch, Calgary, Alberta, Canada, assignor to Foremost International Industries, Ltd., Calgary, Alberta, Canada

Filed Oct. 1, 1973, Ser. No. 402,652
Claims priority, application Canada, Oct. 24, 1972, 154718
Int. Cl. B62d *55/00*
U.S. Cl. 305—35 EB **6 Claims**

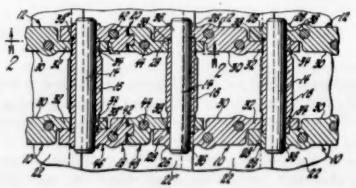


1. A vehicle track comprising a pair of spaced, parallel, flexible belts defining outer ground engaging surfaces, inner surfaces and opposed longitudinally extending outside edges of said track, a plurality of transverse grouser bar assemblies at spaced intervals along said belts and each including an outer grouser bar member engaging said ground engaging surfaces of said belts, a track guide member engaging said inner surfaces of said belts and connecting means securing said members together with said belts clamped therebetween, at least one of said members extending the full width of the track and having opposite end portions terminating adjacent said outside edges of the track, and a pair of rigid members associated with each grouser bar assembly, the pair of rigid members being fixed one each to said opposite end portions and extending substantially perpendicular to the grouser bar assembly immediately outside of said outside edges, the rigid members of adjacent grouser bar assemblies being closely spaced in the longitudinal direction of the track along each side of the track so as to provide a substantially continuous edge protector for the belts.

3,853,360
MASTER COUPLING LINK

Natabara Khuntia, Hudson, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed July 12, 1973, Ser. No. 378,507
Int. Cl. B62d *55/20*
U.S. Cl. 305—58 **1 Claim**

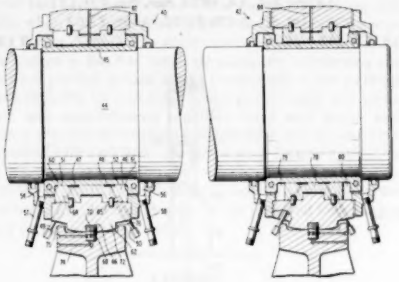


1. In a crawler tractor track; a master coupling link for detachably connecting the ends of said track comprising a pair of transversely spaced link members, a track shoe including a flat plate portion extending between said link members and fastened thereto by a plurality of cap screws, each of said link members having two longitudinally extending separable sections each of which has an outer end portion defining a bore hingedly connected with an end of said track and an inner end portion, said inner end portion of one of said sections being formed with vertically spaced upper and lower parts separated by a cut-out portion, said upper and lower parts and said cut-out portion being of equal longitudinal length, said parts each having a slot formed therein the full length thereof and the inner end portion of the other of said sections being formed with vertically spaced upper and lower projections which correspond in length and spacing to said upper and lower parts and are adapted to be located within said slots in said upper and lower parts so as to form an aperture between said sections, each of said projections having a cross section that progressively increases in width as it extends from said inner end portion and each of said slots having a configuration which is complementary to the configuration of the projections so as to interlock said sections when the projections are located in said slots and form a juncture that is located in a plane which is perpendicular to the flat plate portion of the track shoe so as to prevent separation of the sections along the longitudinal axis of the link member and along an axis parallel to the axis of said bore, and said upper and lower parts and projections being so arranged that upon removal of said cap screws said sections can be separated by relative movement thereof along an axis parallel to the plane of said juncture a distance equal to the longitudinal length of said cut-out portion.

3,853,361
FLUID BEARING SUPPORT FOR TILTABLE METALLURGICAL VESSELS

Judson W. Martt, Amsterdam, Ohio, assignor to National Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 184,560, Sept. 28, 1971, Pat. No. 3,746,328. This application Mar. 14, 1973, Ser. No. 340,947
Int. Cl. F16c *13/02*
U.S. Cl. 308—122 **36 Claims**



1. A bearing structure for use with a heavy tonnage tiltable metallurgical vessel for molten metal comprising

a. a pair of rigidly mounted spaced apart supporting members for supporting the metallurgical vessel therebetween,

b. bearing support means carried by each supporting member,

c. trunnion support structure for embracing and rigidly holding the metallurgical vessel,

d. a pair of trunnion shafts carried at 180° from each other on opposite sides of the trunnion support structure, each shaft having its longitudinal axis of symmetry disposed initially along a designed axis of rotation,

e. a rotatable bearing member fixedly carried by and extending entirely around each shaft,

f. each rotatable bearing member having an outwardly facing bearing surface of circular configuration in planes normal to the longitudinal axis of the shaft,

g. a nonrotating bearing member fixedly carried by each bearing support means, each nonrotating bearing member rotatably receiving and supporting a rotatable bearing member of a shaft,

h. each nonrotating bearing member having an inwardly facing bearing surface with arcuate portions of circular configuration in planes normal to the designed axis of rotation of the associated shaft, one such arcuate portion extending around the minor lowermost portion of the bearing surface of the rotatable bearing member, the one arcuate portion of the bearing surface of the nonrotatable bearing member being complementary in shape to the contiguous surface of the associated rotatable bearing member and having a diameter not substantially greater than the diameter of the associated rotatable bearing member in planes normal to the longitudinal axis of the associated shaft,

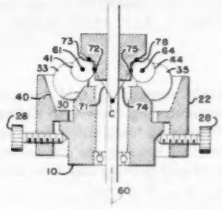
i. means associated with the portion of the bearing surface of each nonrotating bearing member above the one arcuate portion accommodating limited upward movement of the associated shaft away from the one arcuate portion of the bearing surface of such nonrotating bearing member while restraining the associated shaft against unlimited upward movement, and

j. fluid pressure support means for utilizing fluid under pressure between the one arcuate portion of the bearing surface of each nonrotatable bearing member and the contiguous bearing surface of the associated rotatable bearing member to support on fluid under pressure during rotation of the associated shaft the rotatable bearing member surface solely on but out of physical contact with the one arcuate portion of the bearing surface of the nonrotating bearing member.

3,853,362
KINEMATIC BALL THRUST BEARING

Bradford Howland, 77 Massachusetts Ave., Cambridge, Mass. 02139; Howard C. Howland, 205 Winghn Dr., Ithaca, N.Y. 14850, and Arthur T. Proll, 2 Avon Ave., Newburgport, Mass. 01950

Filed Apr. 5, 1972, Ser. No. 241,148
Int. Cl. F16c *19/20*
U.S. Cl. 308—230 **15 Claims**



1. A kinematic thrust bearing comprising

a. an upper race,

b. a lower race,

c. a first set, of number greater than three, of balls for said upper race, said balls being all of substantially the size measured by a first radius r_{44}, and

d. a second set of said number of balls for said lower race, said second set of balls being all of substantially the size measured by a second radius r_{34},

e. said upper race, lower race, and ball sets being so proportioned that each of the balls of said first set contacts two balls of said second set and said upper race on two tracks of contact, an inner upper track, measured by a third radius R_{72}, and an outer upper track measured by a fourth radius R_{73}, each of the balls of said second set contacts two balls of said first set and said lower race on two tracks of contact, an inner lower track measured by a fifth radius R_{95}, and an outer lower track measured by a sixth radius R_{96}, and so that the cone which contains both said upper tracks has its apex at substantially the same point C as the apex of the cone which contains both said lower tracks, and further proportioned so that

f. the cone which is the locus of the center of all said balls, has an apex angle less than 150°, the special case wherein the locus of said centers is a cylinder being included as for an apex angle of 0°.

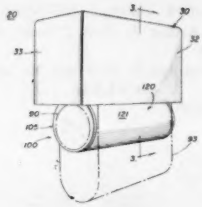
3,853,363
TOWEL DISPENSER

Ole Frederiksen, Frederikssund, Denmark, assignor to Steiner Company Lausanne S.A., Lausanne, Switzerland

Continuation of Ser. No. 223,444, Feb. 4, 1972, abandoned. This application Sept. 21, 1973, Ser. No. 399,750
Int. Cl. B65h *19/00*
U.S. Cl. 312—38 **16 Claims**

1. A towel dispenser of the continuous loop type comprising a housing having associated therewith a loop of towel that extends along an exit path out of said housing to an exposed position accessible to a user and thence along a return path into said housing, towel dispensing apparatus mounted in said housing for dispensing clean towel from a supply thereof into said housing and from said housing into the loop along the exit path when the accessible portion of the loop is pulled by a user, loop take-up means mounted in said housing and coupled to said towel dispensing apparatus for retracting and

storing in said housing soiled towel from the return path when the accessible portion of the loop is pulled by a user, a receptacle suspended exteriorly of and beneath said housing for accommodating therein a supply of clean towel exteriorly of said housing, and cooperating guide members on said housing



and said receptacle suspending said receptacle from said housing for accommodating transverse sliding movement of said receptacle between a towel dispensing position disposed immediately below said housing and a towel servicing position spaced forwardly of said housing and from said towel dispensing position.

3,853,364

FILING CABINET CONTAINING STORING FRAMES FOR SUSPENDED SHEETS

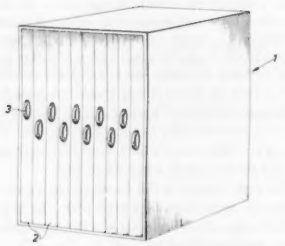
Kurt Bonnie Karl Axel Lundberg, Malarvagen 1, 141 71 Huddinge, Sweden

Continuation-in-part of Ser. No. 183,152, Sept. 23, 1971, abandoned. This application Dec. 7, 1972, Ser. No. 313,056

Claims priority, application Sweden, Dec. 22, 1970, 17473/70; Great Britain, Sept. 24, 1971, 44551/71; Australia, Dec. 12, 1971, 36893/71

Int. Cl. B42f *17/00*

U.S. Cl. 312—184 **24 Claims**



1. A filing cabinet for storing sheet-like articles in a suspended position, said cabinet comprising:

a. a housing;

b. a plurality of frame means movable relative to said housing having a first position within said housing and a second position outside of said housing;

c. a plurality of receiving means, each receiving means receiving a plurality of holding means secured to the upper portion of said articles, wherein each receiving means corresponds to one of said plurality of frame means; and

d. pivot means for coupling said receiving means to a corresponding one of said frame means, wherein said receiving means pivot between a perpendicular and parallel position with respect to said frame means, such that when said receiving means is in said perpendicular position said articles are suspended a first predetermined distance apart parallel to said frame means, said holding means all lying in a single plane perpendicular to said frame means and when said receiving means is in said parallel position said articles are suspended a second predetermined distance apart said second predetermined distance being substantially negligible, said holding means all lying in the plane of said frame means.

3,853,365

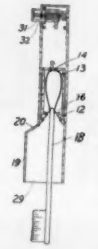
TOOTHBRUSH HOLDER

Chris E. Nielsen, 22 Almaden Ct., San Francisco, Calif. 94118

Filed Jan. 14, 1974, Ser. No. 431,131

Int. Cl. A47b *81/02*; **A46b** *17/02*

U.S. Cl. 312—206 **9 Claims**



1. A holder for a toothbrush or the like comprising a wall mounted enclosure having a bottom opening, a carriage means movable within the enclosure between a lower stop means and an upper stop and retaining means, said carriage means having a bottom opening comprising a first slot, a spring attached interiorly of the carriage means and having spaced portions providing a resilient second slot comprising a holding means parallel to and above the said first slot, and means to release the retaining means to permit the carriage to fall to the lower stop means.

3,853,366

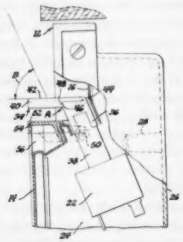
INTEGRAL HINGE PUSH BUTTON FOR APPLIANCE CONTROL PANEL

Keith K. Kesling, Utica, Mich., and Paul D. Bailey, Kettering, Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Oct. 29, 1973, Ser. No. 410,919

Int. Cl. A47b *96/00*

U.S. Cl. 312—223 **1 Claim**



1. An improved wall structure and control arrangement for a domestic appliance comprising an exposed front panel, a rear panel spaced from said front panel to form a compartment, track means slidably supporting said front panel for linear movement in the plane of said front panel between an installed position closing said compartment during normal operation of said appliance and a removed position exposing said compartment for servicing said appliance or changing said front panel, a control switch affixed in said compartment and having a shaft extending toward the outside of said com-

partment, a plastic switch button having a socket portion affixed to said shaft and a finger push portion exposed on the outside of said wall structure for manual manipulation of said switch from outside said compartment, said finger push portion extending into the path of linear movement of said front panel sufficiently to provide a surface expansive enough to carry control indicia for said switch during said normal operation, whereby an interfering relationship occurs between said front panel and said finger push portion during removal of said front panel, and means interconnecting said finger push portion and said socket portion to eliminate said interfering relationship when said front panel is to be removed, said interconnecting means including as additional integral portions of said switch button a flexible hinge permanently connecting said finger push portion to said socket portion and a pair of shoulders respectively on said finger push portion and said socket portion and snap-fastened together when said finger push portion is exposed for manual manipulation and in interfering relationship with said front panel, the snap-fastened shoulders being manually releasable from outside said compartment to eliminate the interfering relationship between front panel and switch button so the front panel can be removed for changing thereof or servicing said switch.

3,853,367

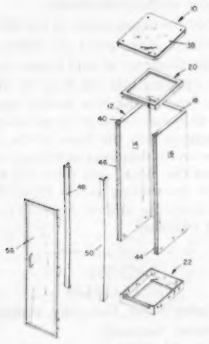
CABINET

John W. Jamison, Costa Mesa; Dan R. Veronda, Fullerton, and Roy E. Denner, Placentia, all of Calif., assignors to Hughes Aircraft Corporation, Culver City, Calif.

Filed Feb. 9, 1972, Ser. No. 224,839

Int. Cl. A47b *43/00, 47/00*

U.S. Cl. 312—259 **4 Claims**



1. A cabinet for the enclosure of equipment, said cabinet comprising:

a base frame defining the lateral dimensions of said cabinet;

a top frame further defining the lateral dimensions of said cabinet;

a unitary housing defining left and right sides and back of said cabinet, with

a forward-facing edge on each of said left side and said right side, said housing being formed of a single panel of laminated material having a metal inner skin, a metal outer skin, and a honeycomb core therebetween attached to and rigidizing said metal skins with the honeycomb core cells being normal to said skins, said panel being bent at the cabinet corners so that said panel defines the sides and back of said housing, said honeycomb core being crushed at said corners and said panel skins extending continuously around said corners, said panel being secured to said top frame and said base frame so that said top frame and said base frame retain said panel in a lateral position, said laminated honeycomb panel carrying the principal physical loads on the cabinet;

a closeout bar positioned between the panel skins at each of said edges, said closeout bars each having means for interengaging thereon;

front closure frames, said front closure frames each having means for interengaging thereon, said means for interengaging on said front closure frames being interengaged with said means for interengaging on said closeout bars.

3,853,368

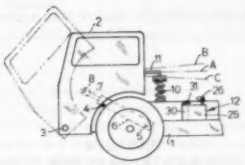
HYDRAULIC PISTON-CYLINDER DEVICE HAVING MEANS FOR PERMITTING LIMITED RECIPROCATING MOTION

Alexander Victor Eichelsheim, Oldenzaal, Netherlands, assignor to Allied Power Inc., Milwaukee, Wis.

Filed Apr. 4, 1973, Ser. No. 347,926

Int. Cl. B62d *27/06, 33/06*

U.S. Cl. 296—35 R **34 Claims**



1. In combination: a pair of pivotally interconnected parts movable angularly with respect to each other and having an at-rest position, a hydraulic piston-cylinder device connected to and between said parts for moving them relative to each other and comprising a cylinder having a bore wherein a piston is slidably movable, said piston and cylinder having at least one at-rest position relative to each other corresponding to the at-rest position of said parts; hydraulic means including a pump for supplying hydraulic fluid to said bore on either side of said piston to effect relative movement between said pair of parts, said hydraulic means further comprising a reservoir; and means for permitting limited reciprocating movement between said piston and cylinder in response to relative movement of said parts about their at-rest position, said means comprising passage means affording communication between opposite sides of said piston in a zone which includes said at-rest position of said piston and cylinder, said zone being of a length greater than the axial length of said piston to allow for lost motion movement of said piston in opposite directions, said passage means permitting fluid flow in opposite directions therethrough and said passage means being connected to said reservoir.

3,853,369

FOLDING TAILGATE STEP

Patrick E. Holden, 10835 Cassandra Way, Dallas, Tex. 75228

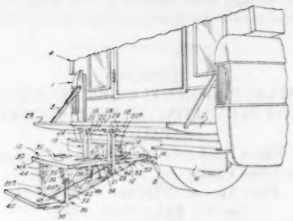
Filed Mar. 22, 1973, Ser. No. 343,791

Int. Cl. B60r *3/02*

U.S. Cl. 296—62 **8 Claims**

1. Steps connectable to a vehicle tailgate comprising: spaced arms; means to pivotally secure first ends of said arms to a vehicle; link means; means slidably securing intermediate portions of said arms to said link means; means to pivotally secure said link means to a tailgate; a first step; means securing the first step between said spaced arms; a rigid angle member; means pivotally securing said angle member adjacent second ends of said arms; brace means positioned to limit rotation of said angle member relative to said arms in one direction; means securing a first end of said brace means to said angle member; means to secure a second end of brace

means to a vehicle; means to permit limited axial movement of said brace means from a first position to a second position;



a second step; and means to secure said second step to the angle member.

3,853,370

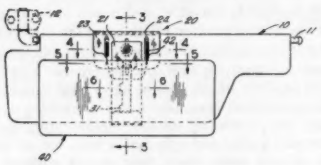
SUN VISOR EXTENSION FOR VEHICLE

Nelle S. Barnhart, 3525 Turtle Creek Blvd., Apt. 2D, Dallas, Tex. 75219

Filed Aug. 27, 1973, Ser. No. 391,126

Int. Cl. B60j *3/02*

U.S. Cl. 296—97 C **5 Claims**



1. A visor extension comprising

a clamping base assembly consisting of at least two members adjustably coupled together, said base assembly being dimensioned to span the width of a vehicle sun visor and having confronting upper and lower flanges for engaging opposite edges thereof;

said base assembly having elongated guide track means extending between said clamping flanges, and latching means adjacent to the lower end of said guide track means;

a flat generally rectangular sheet having a guide member mounted therein intermediate the ends and adjacent to one edge defining its upper edge; said guide member coacting with said guide track means for guiding reciprocating movement of said sheet between an upper retracted position, generally overlying the vehicle sun visor, and a lower extended position, projecting beyond the lower edge of said sun visor;

resilient means connected between said base assembly and said sheet for urging said sheet to said retracted position; and said guide member and said latch means coacting to selectively latch said guide member at the lower end of said guide track means to maintain said sheet in said extended position.

3,853,371

PIVOT SUPPORT FOR WIND DEFLECTORS ON AUTOMOBILE ROOFS

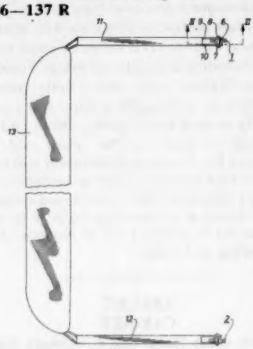
Horst Bienert, Gauting, Germany, assignor to Webasto-Werk W. Baier KG, Stockdorf/Munich, Germany

Filed May 21, 1973, Ser. No. 362,281

Claims priority, application Germany, May 20, 1972, 2224879

Int. Cl. B60j *7/00*

U.S. Cl. 296—137 R **5 Claims**



1. A pivot support for an articulated assembly such as a pivotable wind deflector on an automobile roof comprising in combination:

a pivot block of moderately resilient material, including means for attaching it to a portion of the roof structure; a transverse bore in the pivot block;

a pivot pin adapted for engagement in the bore of the pivot block, the diameter of the pivot pin defining an interference fit with the diameter of said transverse bore; and

a transverse slot opening into the bore of the pivot block over its entire length; the slot having such a width in relation to the diameter of the pivot pin that the latter can be forcibly snapped into the bore of the pivot pin in a radial direction and is then retained therein, as a result of the resiliency of the block, said pivot pin having at least one end portion protruding axially from the pivot block and serving as a bearing support for a cooperating part of the articulated assembly.

3,853,372

WHEELCHAIR

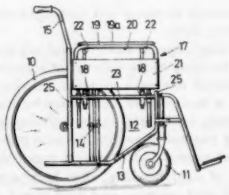
Wilhelm Meyer, Vlotho/Weser, Germany, assignor to Wilhelm Meyer, Vlotho/Weser, Germany

Filed Feb. 23, 1973, Ser. No. 335,014

Claims priority, application Germany, Mar. 4, 1972, 2210492

Int. Cl. A47c *7/00*

U.S. Cl. 297—45 **9 Claims**



1. A mobile invalid chair, containing:

a foldable chassis formed by two side frames held at an adjustable distance from each other by a universal joint, said chassis carrying a seating surface and a back;

an arm support provided in both side frames, each arm support having a side wall and arranged to be vertically displaceable as a unit, the arm support unit being lowerable with its upper resting surface to such an extent that it is in one plane with the seating surface, each arm support unit having vertical guide bars adapted to be lowered within vertical guide sleeves of said chassis, said guide sleeves being disposed with a clearance below said seat surface and secured to said chassis, said arm suppot unit comprising a U-shaped supporting stirrup with its shanks pointing downwardly, said stirrup supporting said arm support on the cross-piece of said stirrup, said side wall being secured to the outside of said supporting stirrup by securing means on the U-shanks, said arm support being formed by a ledge which is rectangular in plan and is provided in the front part of the chair with an outwardly extended enlargement projecting into the region exterior of said chassis; and

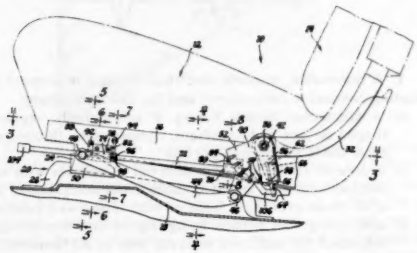
spring-loaded locking pins mounted on said guide sleeves and engaging in recess of said guide bars, said pins being displaceable transversely to the direction of displacement of the guide bars and are pivotably connected by connecting levers to actuating levers mounted to pivot on the chassis.

3,853,373

EASY-ENTER VEHICLE SEAT

Thomas J. Corbett, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 12, 1973, Ser. No. 396,390
Int. Cl. B60n *1/04*
U.S. Cl. 297—341 **3 Claims**



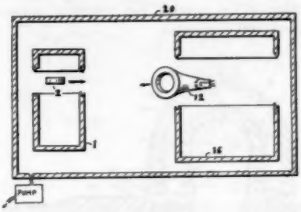
1. In combination with a vehicle, a vehicle seat comprising; a seat cushion assembly, means mounting the cushion assembly on the vehicle and permitting fore and aft adjustment of the vehicle seat, a seat back assembly, pivot means mounting the seat back assembly on the seat cushion assembly to permit movement of the seat back assembly between a seating position and a forwardly tilted easy-enter position, first and second links pivotally connected together at one end, means pivotally connecting the other end of the first link to the pivot means, means pivotally connecting the other end of the second link to the vehicle, the second link rotating the first link about the pivot means when the vehicle seat is adjusted fore and aft, and latch means acting between the first link and the seat back assembly to rotate the first link about the pivot means and move the vehicle seat forwardly when the seat back assembly is moved forwardly to easy-enter position, the latch means being unlatchable to permit rotary movement of the first link relative the seat back to permit fore and aft adjustment of the vehicle seat while the seat back assembly remains in seating position.

3,853,374

METHOD FOR THE MANUFACTURE OF PHOTOELECTRON MULTIPLIERS

Gunter Flasche, Darmstadt, and Werner Tretner, Weiterstadt, both of Germany, assignors to Robert Bosch Fernsehanlangen GmbH, Darmstadt, Germany

Filed Sept. 22, 1972, Ser. No. 291,281
Claims priority, application Germany, Sept. 30, 1971, 2148809
Int. Cl. H01j *9/18*
U.S. Cl. 316—19 **9 Claims**



1. Method for manufacturing an electron discharge tube comprising a bulb which includes a photosensitive layer for detecting radiation in a certain band, which radiation enters the tube through a window, which window is permeable to radiation of that band, and which bulb further includes other electrode structure functioning in cooperation with the photosensitive layer for operation as an electron discharge tube, comprising the steps of:

A. assembling said other electron structure in the bulb, leaving a prepared opening,

B. placing the bulb and the electrode structure contained therein in a first evacuated vessel provided with a crack-off groove,

C. performing a polishing pretreatment on the edge surface of the window and on the edge surface of the bulb which surrounds the prepared opening,

D. constructing the photosensitive layer in connection with the window within a second evacuated vessel provided with a crack-off groove,

E. preheating the photosensitive layer and the electrode structure to degas the preheated elements for vacuum preservation,

F. placing the first and second vessels and their respective contents inside a third evacuated vessel,

G. opening the first and second vessels inside the third vessel by cracking open their respective crack-off grooves,

H. operating a mechanical gripping device which removes the photosensitive layer from the second vessel and places it close to the bulb,

I. inserting the photosensitive layer and the window in the prepared opening while inside the third vessel,

J. sealing the window to the bulb to preserve a vacuum within the bulb, while inside the third vessel, and

K. removing the bulb and contents, forming the discharge tube, from the third vessel.

3,853,375

ELECTRICAL CONNECTOR APPARATUS DISCONNECTABLE LINK ASSEMBLY

James E. McClain, Greenville, Tex., assignor to Esco Manufacturing Company, Greenville, Tex.

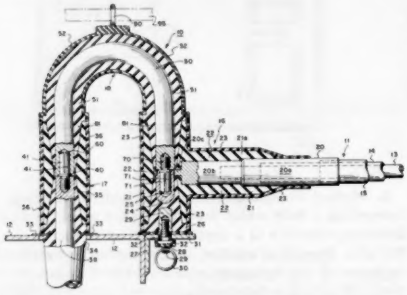
Filed Dec. 15, 1972, Ser. No. 315,636
Int. Cl. H01r *31/08*
U.S. Cl. 339—19 **12 Claims**

1. Electrical connecting apparatus for disconnectably electrically coupling and uncoupling a stationary high voltage electrical cable with electrical apparatus disposed in a housing

while maintaining said cable in a stationary position, comprising:

a. cable connecting means rigidly secured to the electrical apparatus housing, said cable connecting means including a first insulating jacket portion extending from said housing, an elongated central conductor axially extending through a second insulating jacket portion transverse to said first insulating jacket and having one end adapted for coaxial termination with said cable,

b. bushing assembly means rigidly secured to the electrical apparatus housing and including an elongated central conductor axially extending through an insulating jacket portion extending from said housing parallel to said first insulating jacket portion for electrical connection with said electrical apparatus,



c. conductive link means including a central conductor axially extending through an integrally joined insulating jacket, the central conductor and the insulating jacket of said conductive link means having end portions adapted for respective disconnectable coupling with the elongated central conductor and the extending jacket portion of the cable connecting means and the bushing assembly means,

d. means provided on both ends of the central conductor of the said conductive link for respectively mateably engaging with means provided at one end of the elongated central conductors of the cable connecting means and the bushing assembly means, and

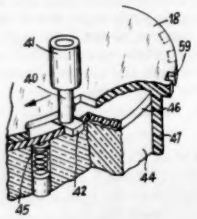
e. means coupled to the insulating jacket of said conductive link means for enabling the simultaneous coupling or uncoupling of the cable connecting means with the bushing assembly means by way of the conductive link means.

3,853,376

ELECTRIC CONNECTION DEVICES

Gilles Adrien Georges Marechal, 36 Quai de Bethune, Paris, France

Filed Mar. 30, 1972, Ser. No. 239,523
Int. Cl. H01r *13/54*
U.S. Cl. 339—41 **8 Claims**



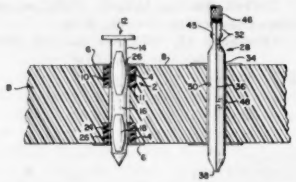
1. An electric connection device of the type comprising, in combination: a plug and a receptacle each having contacts and constituted by an insulating contact support housed within a casing, said plug and said receptacle carrying associated relatively rotational locking means and associated guiding means arranged to couple these said means in a single relative angular position, locations for said contacts on each of said two supports being uniformly spaced over a circumference with exception of one contact which occupies a displaced position with respect to this spaced arrangement, and a safety disc of insulating material provided with openings adapted to be traversed by said contacts of said plug being pivotally mounted on said receptacle coaxially with said circumference defining said contact locations, said safety disc being rotationally displaced by said plug at the time of locking of said plug to said receptacle from an initial angular position corresponding to a given combination of contacts to be uncovered at finish of locking rotation movement, wherein said contact support of each said plug and said receptacle is adjustable in steps of ϕ degrees in relative angular position with respect to a respective one of said guiding means associated respectively with said plug and said receptacle, the angular displacement of that contact which is displaced with respect to the uniform spaced arrangement is $k \cdot \phi$ degrees, k being a whole number and retractable locking means provided for maintaining said safety disc in its initial position at a time of disconnection of said plug from said receptacle.

3,853,377

TIGHT FITTING PLUG CONNECTION AND METHOD FOR MAKING SAME

Bernard Edward Shlesinger, Jr., 9411 Macklin Ct., Alexandria, Va. 22309

Filed Dec. 27, 1971, Ser. No. 212,091
Int. Cl. H01r *13/40;* **H05k** *1/04*
U.S. Cl. 339—59 R **13 Claims**



1. A removable, reusable electrical connector element for mating connector components and the like comprising:

a. a conductor sheath having a substantially regularly shaped surface and a resilient, compressible, flexible and expandable spring wall portion

b. a core of resilient elastic material in contact with said conductive sheath and at all times under compression and at all times exerting a force on said spring wall portion

c. said spring wall portion being slightly and non-abruptly deformed by said core material and at all times under stress

d. said sheath including means for permitting flexing of said spring wall portion inwardly and outwardly, and

e. said sheath being substantially less compressible than said core material.

3,853,378

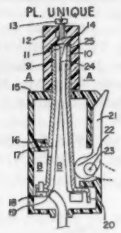
LOCKING DEVICES FOR MOVABLE PIN-SHAPED ELECTRICAL CONTACTS

Armel Louis, 4, rue de l'Eglise, Vitry, France

Filed June 27, 1972, Ser. No. 266,677
Claims priority, application France, June 6, 1972, 72.20257
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 P **4 Claims**

1. A plug device for engaging a cooperating receptacle for transferring electrical current, said plug device comprising a housing, at least one pair of pins supported by said housing, with end portions of both pins in each pair projecting from said housing and being adapted to extend in the same opening in said receptacle, one pin of each pair being fixed relative to said housing, a cam rotatably mounted relative to said housing and engaging said other pin, and lever means for rotating said

cam and urging said end portion of said other pin about a fulcrum point in a direction away from said end portion of said



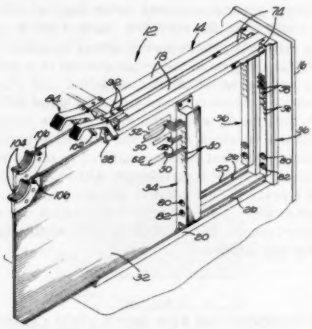
one pin to increase the contact pressure with the walls defining said opening in said receptacle.

3,853,379

PRINTED CIRCUIT BOARD CONNECTOR ASSEMBLY

David S. Goodman, Orange, and Jack E. Langenbach, Newport Beach, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed July 20, 1973, Ser. No. 381,266
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 MP **26 Claims**



7. In printed circuit board connector assembly, at least one printed circuit board, a frame for supporting said board, means on said frame defining a slot for guiding said board, said board having conductive layers thereon and a first set of contacts associated with said layers, and a second set of contacts fixedly mounted adjacent one end of said frame in juxtaposition with said first set of contacts when said printed circuit board is mounted in said frame, the improvement which comprises:

a card guide member slidably mounted on said frame, said slot being formed in said card guide member;

said first and second sets of contacts being spaced from one another when said board is mounted in said frame;

means for moving one of said sets of contacts in tandem causing said two sets of contacts to engage; and

means carried by said slidable card guide for actuating said moving means.

3,853,380

ANGULARLY POSITIONABLE ELECTRICAL CONTACT HOUSING

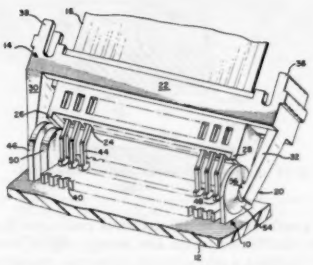
Steven Clark Baker, Middletown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 15, 1973, Ser. No. 360,499
Int. Cl. H01r *13/54*
U.S. Cl. 339—91 R **6 Claims**

1. A electrical contact housing assembly comprising:

first and second housing members of electrically insulating material, a plurality of female receptacles fixedly mounted in one of said members and a like plurality of male pins fixedly mounted in the other of said members arranged to be linearly slidably received in a corresponding female receptacle,

complementary locking means on said housing members



releasably connecting the housing members together such that one housing member can be engaged at different angular positions relative to the other housing member so that the receptacles are aligned with the pins, and

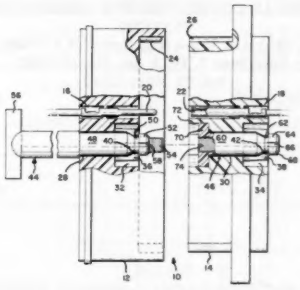
said pins being bent prior to engagement to a predetermined fixed angle of engagement about an axis defined by said locking means.

3,853,381

JACKSCREW RETAINER

Leroy Jack Morningstar, Middletown, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed June 14, 1973, Ser. No. 370,112
Int. Cl. H01r *13/54*
U.S. Cl. 339—92 M **6 Claims**



1. In combination with a pair of mating connector blocks, each block carrying a plurality of pins or receptacles and having a bore, a coaxial counterbore, and a plurality of cantilever locking tines in said counterbore resiliently integral with said block and disposed about said bore, each said tine having a radially inwardly directed detent on the free end thereof, a jackscrew retaining means for securing said blocks in an assembled condition, said jackscrew retaining means comprising:

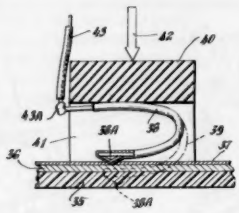
first and second shafts each having an annular recess and an annular shoulder adjacent one end thereof, said recesses being engaged by said detents of said tines and

gripping means on the other end of said first shaft for effecting rotation thereof.

3,853,382
HIGH PRESSURE ELECTRICAL CONTACTS

Michael Lazar, White Plains, N.Y., assignor to Burndy Corporation, Norwalk, Conn.

Filed Apr. 28, 1972, Ser. No. 248,624
Int. Cl. H01r 9/12
U.S. Cl. 339—95 R 9 Claims

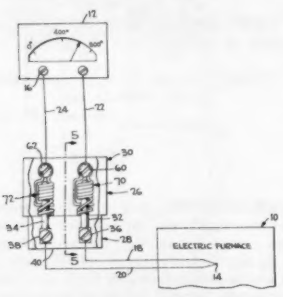


1. In combination in an electrical connector for effecting multiple, readily separable low energy, signal level connections, comprising a plug contact connector characterized by a plurality of extending spring elements, each having a male contact point, said elements and said contact points being made of an electrically conductive metal coated with a layer of a deformable white metal, and a receiving member comprising a substrate having thereon a plurality of electrically conductive elements made of an electrically conductive metal, said elements being also coated with a deformable ductile white metal, said plug connector with said coated male contact points being adapted to effect a separable spring-loaded contact connection with said coated elements of said receiving member, such that when the said plurality of male contact points is in spring-loaded penetrating contact against the coated elements of said receiving member, the white metal coatings at the area of contact are mutually plastically deformed at the point of contact, to provide a low resistance contact between the coated male contact points and the said coated electrically conductive elements.

3,853,383
ELECTRICAL CONNECTOR FOR THERMOCOUPLE SYSTEMS

Edward K. Shabet, 4 Truro Rd., Butler, N.J. 07405

Filed June 7, 1973, Ser. No. 367,900
Int. Cl. H01r 13/12
U.S. Cl. 339—95 R 20 Claims



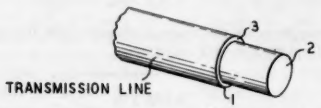
1. A jack terminal for use in a jack assembly wherein a plug is received in the jack terminal comprising:

a continuous length of wire coiled to define a receptacle portion having a plurality of coils and having a portion thereof bent to form a wiper arm which extends through said receptacle and between said coils to provide wiping contact with the plug member when the plug member is inserted in said receptacle.

3,853,384
OPTICAL TRANSMISSION LINE

Douglas Arthur Pinnow, Berkeley Heights, and LeGrand Gerard Van Uitert, Morris Township, Morris County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 16, 1973, Ser. No. 351,168
Int. Cl. G02b 5/14
U.S. Cl. 350—96 WG 16 Claims

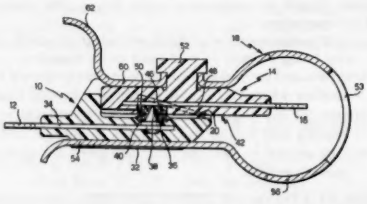


1. Glass transmission line for the transmission of electromagnetic radiation within the wavelength range of from 0.5 to 2.0 μm, said line consisting essentially of a core member manifesting a first refractive index for said wave energy and a cladding about said core, said cladding including at least one layer having a second refractive index for said wave energy which is lower than the said first index, said second index being of a value at least 0.1 percent lower than said first index at least within a region in the neighborhood of a periphery of the said cladding, in which said core and said cladding are both primarily a mixed composition of B_2O_3 and SiO_2 with the SiO_2/B_2O_3 ratio being within the mole fraction range of from 30:1 to 2:1 and in which at least the innermost portion of the core contains sufficient additive material to result in a refractive index-increase for a wavelength within the said range of at least 0.1 percent, said additive being completely dissolved in the said mixture and having an index which is a maximum of 30 percent greater than that of the said mixture as unmodified by the said additive.

3,853,385
SEALED CONNECTOR FOR INSULATED CONDUCTORS

Mario Palazzetti, Avigliana, and Franco Grisotto, Turin, both of Italy, assignors to Fiat Societa per Azioni, Turin, Italy

Filed Nov. 16, 1973, Ser. No. 416,547
Claims priority, application Italy, Nov. 21, 1972, 70649/72
Int. Cl. H01r 11/20
U.S. Cl. 339—96 7 Claims



1. A connector adapted to effect a sealed and releasable connection between insulated conductors, said connector comprising, in combination:

a. a first rigid insulating impermeable body having a working face formed with a depresssion;

b. a first metal plate embedded in said first body and extending from the depression through the first body, said plate having a first external terminal on the outside of the first body;

c. a contact pin electrically connected to said first plate and housed in the depression of the first body, said pin projecting beyond the plane of the said working face;
d. a layer of gelatinous resin filling the depression in the working face of the first body and entirely covering the contact pin;
e. a second rigid insulating impermeable body having a working face formed with a depression;
f. a second metal plate extending from the depression and through said second body, said second plate having a second external terminal on the outside of the second body;
g. a layer of gelatinous resin filling the depression in the second body; and
h. pressure means for pressing the two bodies against each other with their working faces facing each other, so that the contact pin carried by the first body perforates the layers of gelatinous resin in the two depressions to make contact with the plate in the depression of the second body.

3,853,386

LOW-LOSS, HIGHLY REFLECTIVE MULTILAYER COATING SYSTEM FORMED OF ALTERNATE HIGHLY REFRACTIVE AND LOW-REFRACTIVE OXIDE LAYERS

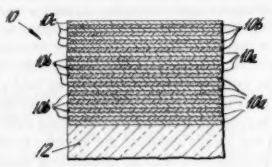
Elmar Ritter, Vaduz, and Hans K. Pulker, Triesen, both of Liechtenstein, assignors to Balzers Patent-und Beteiligungs-AG, Balzers, Furstentum, Liechtenstein

Filed Sept. 6, 1973, Ser. No. 394,574

Claims priority, application Switzerland, Sept. 19, 1972, 13713/72

Int. Cl. G02b *5/28*

U.S. Cl. 350—164 **4 Claims**



1. A low-loss, highly reflective multilayer system for coating a substrate comprising alternate layers of high refraction and low-refraction oxide layers whose low-refraction layers comprise a low-absorption oxide of silicon and said high refraction layers comprise titanium oxide, and wherein at least the three last high refraction layers located on the side of the system which is opposite to the substrate side comprises zirconium oxide.

3,853,387

VARIABLE MAGNIFICATION LENS ASSEMBLY HAVING TWO ODD-LENSES

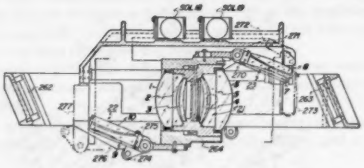
David G. A. Demaine, and John M. Palmer, both of Leeds, England, assignors to Rank Xerox Limited, London, England

Filed June 19, 1973, Ser. No. 371,458

Int. Cl. G02b *15/10*

U.S. Cl. 350—183 **4 Claims**

1. A lens assembly comprising six elements disposed along an optical axis and arranged in a substantially symmetrical arrangement of two groups of three elements, the outermost pair of elements of each group of three being a cemented doublet with the outermost element of each doublet being bi-convex and the innermost element of each doublet being bi-concave, the innermost element of each group of three being concavo-convex with its convex surface outermost, the lens assembly being according to the following constructural data:



ITEM	RADIUS (inches)	AXIAL THICKNESS (inches)	REFRACTIVE INDEX
OBJECT PLATEN	PLANE	0.47240	N(404.7) = 1.53735 N(435.8) = 1.53338
	PLANE		N(486.1) = 1.52860
AIR		28.41036	1.0
LENS 1	3.4665	1.20078	N(404.7) = 1.64185 N(435.8) = 1.63698
	−2.6,772		N(486.1) = 1.63113
LENS 2	−216.772	0.27108	N(404.7) = 1.56931 N(435.8) = 1.56355
	2.570		N(486.1) = 1.55679
AIR		0.18611	1.0
LENS 3	4.2202	0.30986	N(404.7) = 1.64185 N(435.8) = 1.63698
	6.5586		N(486.1) = 1.63113
AIR		0.68583	1.0
STOP			
AIR		0.70228	1.0
LENS 4	−6.5586	0.31430	N(404.7) = 1.64120 N(435.8) = 1.63634
	−4.1322		N(486.1) = 1.63050
AIR		0.22659	1.0
LENS 5	−2.5575	0.38078	N(404.7) = 1.56931 N(435.8) = 1.56355
	216.772		N(486.1) = 1.55679
LENS 6	216.772	1.14532	N(404.7) = 1.64185 N(435.8) = 1.63698
	−3.4834		N(486.1) = 1.63113
AIR		19.6750	1.0
IMAGE SURFACE			

3,853,388

CLUSTER ASSEMBLY AND CONNECTOR CLIP THEREFOR

Henry H. Heimbrock, Cincinnati, Ohio, assignor to Van Products Incorporated, Cincinnati, Ohio

Filed Oct. 17, 1972, Ser. No. 298,455

Int. Cl. H01r *33/72*

U.S. Cl. 339—192 RL **5 Claims**

1. A connector clip consisting of a one piece sheet metal element for making electrical connection between a lead wire and a pin comprising,

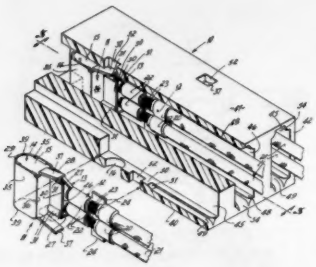
ferrule means for gripping a lead wire,

a pair of wings projecting in opposite directions from said ferrule means,

a shank projecting from said ferrule means,

a strip projecting from said shank, said strip being looped upon itself to form a receptacle for the receipt of said pin, the dimension between the extremities of said wings being

substantially the same as the width of said strip,



and means tightly clamping the end of said strip against said shank, thereby forming two low resistance current paths from said receptacle to said shank.

3,853,389

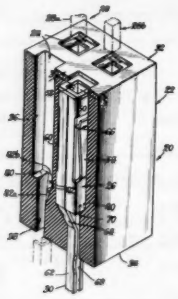
ELECTRICAL CONNECTOR AND CONTACT

Carl Occhipinti, Melrose Pk., Ill., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Continuation-in-part of Ser. No. 261,698, June 12, 1972, abandoned. This application Feb. 16, 1973, Ser. No. 333,400

Int. Cl. H01r *9/08*

U.S. Cl. 339—217 S **27 Claims**



1. An electrical connector comprising a body of insulating material having a front face and a cavity extending longitudinally therefrom in a rearward direction, and

a contact at least partially disposed in said cavity and including a front elongated socket section for front engagement with a mating contact and a rear tail section for engagement with an external conductor, said socket section including at least one pair of opposite outer sidewalls and at least one pair of contact fingers outwardly supported by said sidewalls, said fingers including longitudinally offset contact engagement surfaces inwardly disposed within said socket section and beam sections inclined outwardly from said surfaces toward said sidewalls in opposite longitudinal directions, each of said beam sections being integral with one of said side walls and supporting one of said engagement surfaces, one of said contact-engagement surfaces being frontwardly disposed so that said mating contact will initially engage only one of said surfaces with the other of said contact engagement surfaces being rearwardly disposed and the beam section with said rearwardly disposed surface being inclined rearwardly and disposed laterally opposite said frontwardly disposed surface to guide said mating contact to a center position in said socket section and into engagement with said frontwardly disposed surface.

3,853,390

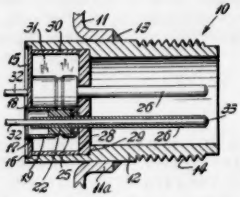
HERMETICALLY SEALED ELECTRICAL CONNECTOR

Robert E. De Koeyer, and Marion T. Mikita, both of Milford, Conn., assignors to Westport Development & Manufacturing Company, Inc., Milford, Conn.

Filed Aug. 21, 1972, Ser. No. 282,129

Int. Cl. H01r *5/04*

U.S. Cl. 339—275 R **2 Claims**



1. An electrical connector for providing a hermetically sealed leakproof electrical connection through a wall over a wide temperature range comprising a tubular shell secured to the wall to have an interior end portion located on one side of the wall and an open exterior end portion on the other side of the wall, a base closing the interior end portion of the shell and having at least one hole, a terminal secured to the base at the hole to project into the shell, said terminal including an electrically insulating ceramic annulus having a through hole, means securing one end portion of the annulus to the base, a cap welded to the other end portion of the annulus to form a sealed securement, a tube extending through the through hole of the annulus and the cap, means welding said tube only to the cap and the through hole of the annulus to form a sealed securement, means for securing a conducting wire in the tube, and in which the means securing the annulus to the base and the cap are formed of electrical conducting material and in which they are spaced apart on the annulus to provide an electrically insulating gap therebetween on the periphery of the annulus.

3,853,391

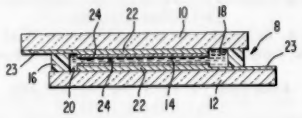
FABRICATION OF LIQUID CRYSTAL DEVICES

Howard Sorkin, Berkeley Heights, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 21, 1973, Ser. No. 427,347

Int. Cl. G02f *1/16*

U.S. Cl. 350—160 LC **2 Claims**



1. A liquid crystal device comprising:

an enclosure and a liquid crystal material therewithin,

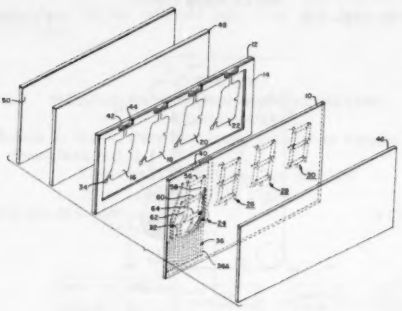
a surface of said enclosure having an electrode thereon, and a layer of magnesium fluoride on said electrode providing an oriented microstructure along with molecules of said liquid crystal material sympathetically align.

3,853,392

GASKET FOR LIQUID CRYSTAL LIGHT SHUTTERS

James L. Fergason, Kent, Ohio, assignor to Hoffman-La Roche Inc., Nutley, N.J.

Filed Sept. 13, 1973, Ser. No. 396,789
Int. Cl. G02f 1/16
U.S. Cl. 350—160 LC 8 Claims



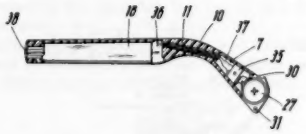
1. In a field effect liquid crystal light shutter, the combination of a layer of liquid crystal material sandwiched between transparent parallel plates, films of transparent conductive material on the plates and in contact with the liquid crystal material, means for applying a potential between said films of transparent material to thereby effect a light shutter action, a gasket surrounding said layer of liquid crystal material to confine it between said plates, said gasket being in contact with said films of conductive material and being formed from an insulator containing a material which will reduce the effective resistance of the liquid crystal layer between the films to decrease the capacitive storage time of said light shutter.

3,853,393

TUBE MEANS WITHIN AN INJECTION-MOLDED TEMPLE FOR ACCOMMODATING ELECTRIC CONDUCTORS THEREIN

Jurgen Fila, and Joachim Kwiatkowski, both of Berlin, Germany, assignors to Robert Bosch Electronik GmbH, Berlin, Germany

Filed Aug. 28, 1973, Ser. No. 392,175
Claims priority, application Germany, Sept. 22, 1972, 2246737
Int. Cl. G02c 5/14; H04r 25/00
U.S. Cl. 351—111 7 Claims



4. An eyeglass temple as defined in claim 3, wherein said material is a metal.

3,853,394

VIDEO FILM PROJECTOR

Earl Chamberlin, 1804 Mission, Santa Cruz, Calif. 95060

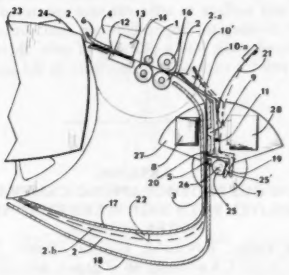
Filed June 6, 1973, Ser. No. 367,641
Int. Cl. G03b 1/00
U.S. Cl. 352—184 8 Claims

1. A film projector comprising a gate, means forming an aperture in the gate, means having a light path through the aperture, drive means for driving a film strip through the gate, registration pin means for engaging perforations in a film strip driven through the gate to hold the strip motionless with respect to the aperture, shutter means for interdicting the light path, and synchronizing means movable in response to rotation of said shutter member through the light path to engage the film strip in the gate and disengage it from the registration pin for positively synchronizing the shutter means with transport of the film strip past the aperture,

wherein said shutter means comprises a shutter member mounted on a rotating shaft for rotation through said light path,

and wherein said synchronizing means comprises a cam mounted on said shaft for rotation therewith, and a cam follower member pivotally mounted on the projector frame, and having a finger arranged to intermittently engage a film strip in the gate adjacent the registration pin and disengage it from the registration pin as the cam rotates,

said cam follower member further comprising a distal end adapted to engage a film strip in the projector upstream of the gate and spring means for biasing said distal end against a film strip in the projector whereby film upstream of the gate will inherently bias the follower against the cam end and, upon disengagement of the film strip from the registration pin, the follower will urge the film strip through the gate under the force of said spring means.

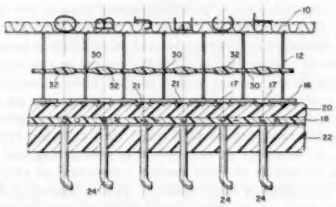


3,853,395

MICRO OPTIC STORAGE AND RETRIEVAL SYSTEM

George J. Yevick, Leonia, N.J., assignor to Personal Communications, Inc., Stamford, Conn.

Filed Mar. 9, 1973, Ser. No. 339,905
Int. Cl. G03b 21/11, 23/08
U.S. Cl. 353—27 6 Claims



1. A microfiche and reader for projecting and viewing micro optic information carried by a microfiche having a plurality of

lensettes, the reader including a viewing surface against which information is adapted to be projected, the microfiche carrying a plurality of images each defined by a set of sub-images spaced over the microfiche, the sub-images being each adapted to be projected over the multiplicity of parallel, spaced optical axes to the viewing surface, and an apertured mask positioned between the microfiche and the viewing surface, the improvement which comprises:

a. an intermediate projection lens positioned between each mask aperture and said viewing surface and having its optic axis coincident with the normal axis of each said mask aperture,

b. each mask aperture being aligned with one of said lensettes, the number of lensettes being greater than both the number of projection lenses and mask apertures,

c. a plurality of vertical, opaque septa extending from adjacent said surface to adjacent said apertured mask, said septa dividing the space between said surface and said apertured mask into a plurality of cells, there being one such cell for each of said apertures in the mask.

3,853,396

CONTINUOUS PHOTOGRAPHING CAMERA WHICH CAN BE DRIVEN WITH HIGH SPEED BY AN AUXILIARY POWER SOURCE

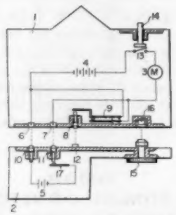
Mitsutoshi Ogiso, Kawasaki; Hiroshi Aizawa, Tokyo, and Susumu Kozuki, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 6, 1973, Ser. No. 394,573

Claims priority, application Japan, Sept. 6, 1972, 47-103738

Int. Cl. G03b *1/12, 19/04*

U.S. Cl. 354—173 **5 Claims**



1. An electric driving system, for a still camera including walls forming a camera main body, comprising, in combination, a main electric power source mounted in said main body; motor operated driving means in said body operable, when connected to said source, to perform functions of the camera including film wind-up and shutter charging and release; a normally closed switch means in said main body in series in a supply circuit connecting said driving means to said source; a pair of first terminals, on a wall of said body, connected to respective opposite ends of said switch means; and an auxiliary power source device including a casing constructed for disengageable coupling to said body wall carrying said first terminals, an auxiliary power source in said casing and a pair of second terminals on said casing connected to respective opposite terminals of said auxiliary power source and each engageable with a respective first terminal upon coupling of said casing to said body; said normally closed switch means being opened responsice to coupling of said casing to said body whereby said main and auxiliary power sources are connected in series with each other responsive to such coupling.

3,853,397

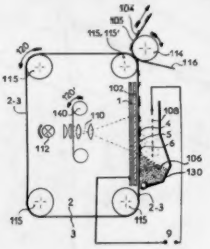
DEVICES FOR REPRODUCING BY PHOTOELECTRIC METHOD

Marcus Cantarano, 47, av. F. Roosevelt, Thiais 94320, France

Division of Ser. No. 152,962, June 14, 1971, Pat. No. 3,776,723, which is a continuation-in-part of Ser. No. 715,313, March 22, 1968, abandoned. This application Sept. 6, 1973, Ser. No. 394,648

Int. Cl. G03g *15/00*

U.S. Cl. 355—3 R **18 Claims**



1. An electrographic device comprising a photoconductive layer, means for placing a layer of electrically chargeable particles against said photoconductive layer, means for exposing said photoconductive layer to a pattern of radiation forming a conductivity pattern in said photoconductive layer, and means for generating across said layer of electrically chargeable particles an alternatively modulated electric field of sufficient strength to transfer alternating electric charges from said conductivity pattern to said layer of electrically chargeable particles whereby said layer of particles receives a pattern of greater and lesser alternating charges, said greater alternating charges removing a part of said particles while said lesser alternating charges maintain the remaining particles in said layer of particles thereby developing a stable electrographic image.

3,853,398

MASK PATTERN PRINTING DEVICE

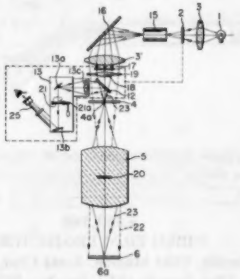
Ichrio Kano, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 4, 1973, Ser. No. 366,576

Claims priority, application Japan, July 5, 1972, 47-67399; July 5, 1972, 47-67401

Int. Cl. G03b *27/70*

U.S. Cl. 355—43 **11 Claims**



1. A mask pattern printing device for a mask having a prescribed pattern, a photo-sensitive plate on which the pattern of the mask is photographed and printed, optical means for passing an illuminating beam of light along a path through the

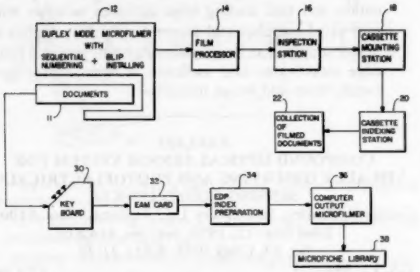
mask and onto the plate and a reflected beam from the plate, and a mask pattern observation means, being characterized by a means to polarize the illuminating light through the mask at the time of observation, said observation means including means in the optical path between the mask and the photo-sensitive plate to virtually delay the polarization state of the polarized luminous beam by a quarter wavelength, and said observation means including analyzer means in the reflected path, for eliminating the harmful reflected light from the mask and observing the reflected light from the photo-sensitive plate only.

3,853,399

METHOD OF STORING AND RETRIEVING INFORMATION

Robert J. Walsh, Cardova, Tenn., assignor to Plough, Inc., Bloomfield, N.J.

Filed Oct. 17, 1973, Ser. No. 407,315
Int. Cl. G03b *27/64*
U.S. Cl. 355—64 **6 Claims**



1. A method of storing and retrieving information which has been gathered from a plurality of documents comprising:

a. randomly filming a document on a roll of film while simultaneously imprinting a film index number on the document;

b. encoding the film index number, a library access number and a document number onto a storage means to form input data;

c. sorting the input data by means of electronic data processing equipment to place the input data in order by library access number and generate a magnetic tape containing the input data in order by library access number;

d. converting the ordered magnetic tape into a strip of film containing the input data in order by library access number; and

e. cutting the ordered strip of film into a plurality of microfiche forms so that a library of microfiche forms arranged by library access number has been created.

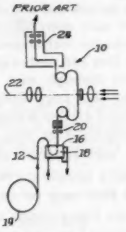
3,853,400

LIQUID APPLICATOR FOR A PHOTOGRAPHIC PRINTER

Hideo Hosaka, Tokyo, Japan, assignor to Bell & Howell Company, Chicago, Ill.

Filed June 6, 1973, Ser. No. 367,515
Int. Cl. G03d *5/06*
U.S. Cl. 355—103 **11 Claims**

1. In a photographic film printer having a printing axis and having means for moving a first image bearing film and a second photosensitive film through respective first and second film paths, for coating the first and second surfaces of said first film with a liquid and for guiding said first and second films across said printing axis thereby exposing said image from said first film onto said second film, the improvement comprising: a liquid applicator means through which said first film path traverses, said liquid applicator means including a first liquid supply means and a second liquid supply means, a first roller means adjacent to said first film path and to said first liquid supply means wherein said first roller means rotates through at least a portion of said liquid in said first liquid supply means and wherein said first roller means transfers said liquid to said first surface of said first film and a second roller means adjacent to said first film path and to said second liquid supply means wherein said second roller means rotates through at least a portion of said liquid in said second liquid supply means and wherein said second roller means transfers said liquid to said second surface of said first film, and means for selectively



varying the speed of rotation of said first and said second roller means whereby a preselectable quantity of liquid is applied to the surfaces of said film regardless of the speed of which said film passes through said liquid applicator means;

a printing means adjacent to said liquid applicator means through which said printing axis traverses and through which said first and second film paths traverse, wherein said first and second film paths traverse said printing axis whereby said image on said first film is exposed onto said second film; and

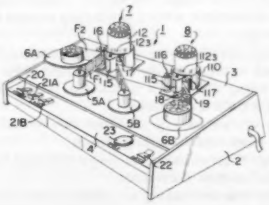
a drying means adjacent to said printing means through which said first film path traverses wherein said drying means dries said first film.

3,853,401

ROLL DUPLICATOR FOR CONTINUOUSLY COPYING IMAGES OF AN ORIGINAL FILM ONTO A COPY FILM

Mutsuhiro Inoue, Sagamihara, and Shunzo Inoue, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 23, 1971, Ser. No. 155,754
Claims priority, application Japan, June 26, 1970, 45-55814
Int. Cl. G03b *27/30*
U.S. Cl. 355—106 **7 Claims**



1. A roll duplicator for continuously copying images of an original film onto a copy film, comprising:

supply reel means for carrying thereon a roll of copy film, said copy film being able to form color by light of a first wavelength range and losing its color forming property by light of a second wavelength range different from said first wavelength range;

first exposure means including a first light source for producing light of said first wavelength range, and first guide means for guiding said copy and original films in overlapped relationship through an area illuminated by a flux of light produced by said first light source;

second exposure means provided downstream of said first exposure means in the direction of movement of said copy film, said second exposure means including a second light source for producing light of said second wavelength range, and second guide means for guiding at least said copy film through an area illuminated by a flux of light produced by said second light source;

take-up reel means for winding thereon said copy film; and copy film driving means including a member for driving said take-up reel means and said copy film so as to continuously transport said copy film from said supply reel means to said take-up reel means;

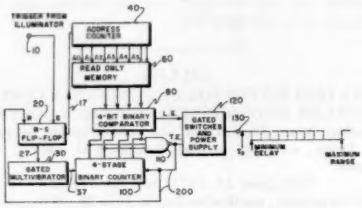
whereby said copy film and said original film may be guided while overlapped through said first exposure means, whereafter either said copy film may be singly guided through said second exposure means or both of said copy film and said original film may be guided while overlapped through said second exposure means, so that positive or negative images corresponding to the images on said original film may be continuously formed and fixed on said copy film through exposure processes provided by said first and second exposure means.

3,853,402

DIGITAL GATED DEPTH OF FIELD INTENSITY EQUALIZER

Donald Nichols, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 1, 1974, Ser. No. 438,920
Int. Cl. G01c *3/08*
U.S. Cl. 356—5 **7 Claims**



1. A digital gating system for an image intensifier in which the image intensifier is gated on in accordance with the inverse square law in range, the system comprising:

a pulsed illuminator source producing output trigger pulses therefrom;

a switching circuit having a first and a second input and a first and a second output therefrom with first of said inputs being connected to and operating simultaneously with said pulsed illuminator;

a pulsing circuit having an input connected to said first output from said switching circuit;

a four stage binary counter having a first and a second input and four outputs therefrom;

an address counter having an input connected to said second output from said switching circuit and having multiple outputs therefrom;

a read only memory having multiple inputs that are connected to said multiple outputs from said address counter and having four outputs therefrom, said read only memory having stored therein an assigned number of switching pulses in a total cycle of sixty four switching pulses at each delay on said multiple outputs from said address counter to the input of said read only memory;

a four bit binary comparator having four inputs from said read only memory and four inputs from said four stage binary counter and two outputs therefrom;

a logic circuit having three inputs from three of said four outputs from said four stage binary counter and having an output therefrom; and

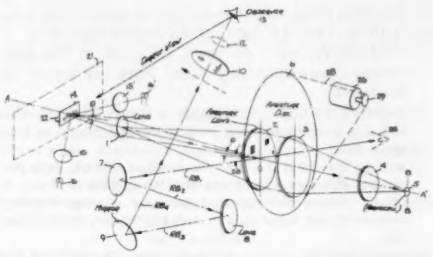
gates switches and power supply having a first and a second input and an output therefrom wherein said output from said logic circuit produce a trailing edge pulse when said four stage binary counter has cycled through all four outputs wherein said trailing edge pulse is simultaneously applied to said first input of said gated switches and power supply and to said second input of said switching circuit for stopping said switching circuit and to said four stage binary counter for resetting said four stage binary to receive the next output trigger pulse from said pulsed illuminator source for triggering said switching and pulsing circuits and wherein said output from said four bit binary comparator produces a leading edge that is applied to said second input to said gated switches and power supply whereby said leading edge is varied in time commensurate with the inverse square law of returned illumination and said leading edge activates switches within said gated switches and power supply that applies said power supply to an image intensifier tube and said trailing edge deactivates said switches to remove said power supply from said image intensifier.

3,853,403

COMPOUND OPTICAL-SENSOR SYSTEM FOR VISUALLY OBSERVING AND PHOTOELECTRICALLY SENSING CODED INDICIA

George P. Bentley, 168 Cherry Ln., Amherst, Mass. 01002

Filed Nov. 12, 1973, Ser. No. 414,819
Int. Cl. G06k *9/08*; **G01n** *21/48*
U.S. Cl. 356—71 **22 Claims**



1. An optical device for measuring optical reflectance characteristics of characters and other like indicia arranged upon a substrate, the reflectivity of said substrate and the reflectivity of the indicia being substantially different, said device comprising:

a first mask having a window behind which the indicia bearing region of the substrate is adjustably positioned;

means for illuminating the region of the substrate behind said window with substantially uniform flux;

a first lens arranged a spaced distance from said window and having a front surface facing said window and a rear surface remote from said window;

a second lens positioned between said window and said first lens for imaging at least a portion of the illuminated indicia in said window on the rear surface of said first lens;

relfective means along the rear surface of said first lens for reflecting rays impinging on the surface of said reflecting means, said reflective means having at least one aperture for passing rays impinging upon said aperture through said aperture;

sensing means positioned in a sensing plane located a spaced distance from the rear surface of said first lens for sensing radiation passing through said aperture;

a third lens positioned between said first lens and said sensing means for imaging the aperture stop of said second lens in said sensing plane.

3,853,404

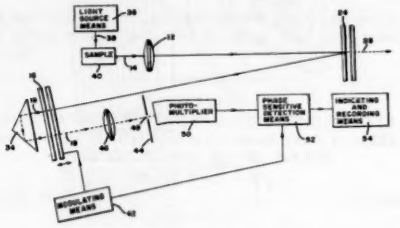
SIMULTANEOUS INTERFEROMETRIC TRANSMISSION OF PERIODIC SPECTRAL COMPONENTS

Joseph J. Barrett, Morris Plains, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 280,378, Aug. 14, 1972, abandoned. This application June 25, 1973, Ser. No. 373,576

Int. Cl. G01j *3/44*; **G01b** *9/02*

U.S. Cl. 356—75 **29 Claims**



1. Apparatus for analyzing light having spectral components periodic in frequency comprising:

a. light conditioning means for collecting, collimating and transmitting said light; and

b. primary interferometric means adapted to receive said light for selectively separating periodic spectra therefrom and transmitting said spectra in the form of a detectable signal, said primary interferometric means having interference producing means for providing a plurality of transmission windows regularly spaced in frequency, the frequency spacing between adjacent windows being adjusted to equal substantially the frequency difference between adjacent spectral components of the same periodic spectrum, and scanning means for causing the transmission peaks for adjacent orders to coincide with the spectral lines of the components, whereby said detectable signal is a fringe derived from a plurality of periodic spectral lines and has an intensity substantially equal to their sum.

3,853,405

HEAT OR LIGHT SOURCE TRACKING DEVICE

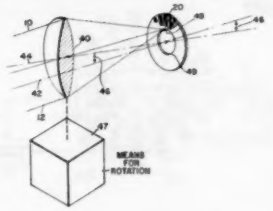
Fred P. Adler, Los Angeles, and William A. Craven, Jr., Culver City, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Sept. 4, 1956, Ser. No. 608,649

Int. Cl. G01s *3/78*

U.S. Cl. 356—152 **7 Claims**

1. A radiant energy device for indicating when a predetermined axis is in line with a source of radiant energy and comprising in combination, a rotatable optical system having an axis of rotation and an optical axis for focusing an image of said source upon a plane disposed substantially perpendicular thereto, said optical system being disposed with said axis of rotation passing through a predetermined point in said plane perpendicular thereto and with said optical axis nonparallel to said axis of rotation and passing through said plane, means for rotation of said optical system coupled thereto for causing said image to traverse a circular path, a reticle disposed substantially in said plane and having a center point coincident with said axis of rotation, said reticle including means for amplitude modulating the radiant energy passing therethrough as said image traverses said circular path, the amplitude of modulation being in proportion to the displacement of the center of said circular path from the center point of said reticle, and a radiant energy detector axially aligned with said reticle and



being responsive to the amplitude modulated radiant energy passing through said reticle to develop an output signal indicative of the concentricity of said circular path with respect to said axis of rotation.

3,853,406

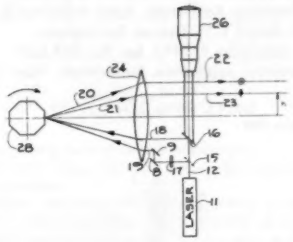
DIFFERENTIAL OPTICAL NONCONTACTING DIAMETER GAUGE UTILIZING A PAIR OF LINEARLY SCANNING LIGHT BEAMS SEQUENTIALLY SCANNING THE TEST PIECE

Carl A. Zanoni, Middletown, Conn., assignor to Zygo Corporation, Middlefield, Conn.

Continuation-in-part of Ser. Nos. 368,441, June 8, 1973, abandoned, and Ser. No. 388,267, Aug. 14, 1973, , and Ser. No. 394,562, Sept. 6, 1973,. This application Dec. 3, 1973, Ser. No. 421,247

Int. Cl. G01b *11/02*

U.S. Cl. 356—167 **8 Claims**

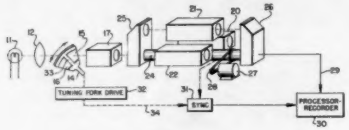


1. An electrooptical device for measuring the cross-sectional width of an opaque test object which comprises (1) a source of radiant energy which produces a narrow beam; (2) means for splitting said beam into two parallel beams of nearly equal intensity and of such different polarization that the two beams can be readily separated; (3) means for adjusting the distance between the two parallel beams; (4) means for focusing said two beams onto a reflecting uniformly rotating surface which reflects the beams onto (5) means for collimating said reflected beams to provide a pair of linearly-scanned light beams which are separated by a uniform preset distance and which can be interrupted by the object; (6) means for collecting, separating, and separately photosensing the two linearly-scanned beams to produce two pulses corresponding to the interruption and noninterruption of the beams by the opaque test object; and (7) means for processing said pulses to produce a pulse whose width is proportional to the difference between the width of the test object and the distance between the two parallel-scanned beams.

3,853,407
MULTIPLE PATH SPECTROPHOTOMETER METHOD AND APPARATUS

C. Forbes Dewey, Jr., Belmont, Mass., assignor to Sensoresearch Corporation, Lincoln, Mass.

Filed Apr. 23, 1973, Ser. No. 353,307
Int. Cl. G01j *03/48*; G01n *21/34*
U.S. Cl. 356—189 7 Claims

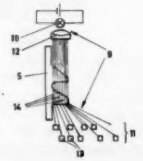


1. A method of spectrophotometry comprising:
a. Placing a material exhibiting substantially spectrally uniform light absorption in a first channel of a spectrophotometer;
b. placing a material having a negligible absorption of a predetermined first spectral band and known absorption of a predetermined second spectral band in a second channel of said spectrophotometer;
c. placing a material having negligible absorption of said first spectral band and unknown absorption of said second spectral band in a third channel of said spectrophotometer;
d. illuminating said channels sequentially with alternations of said first and second spectral bands; and
e. detecting the illumination intensity passed by each channel in sequence so as to obtain information indicative of the nature of the material in said third channel.

3,853,408
DEVICE FOR DETECTING A TEXTILE THREAD CARRIED THROUGH A CHANNEL

Gerardus Hendrikus Kaalverink, Asten, Netherlands, assignor to Ruti-Te Strake B.V., Deurne, Netherlands

Filed May 7, 1973, Ser. No. 357,843
Claims priority, application Netherlands, May 10, 1972, 7206368
Int. Cl. G01m *21/18*, *21/30*
U.S. Cl. 356—199 7 Claims

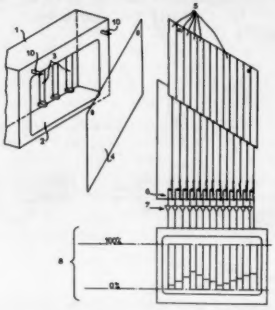


1. In a shuttleless loom having apparatus for detecting the insertion of a weft through the shed, comprising a reed beam having mounted thereon a series of reed blades which have, in their beating edges, aligned U-shaped notches forming a transport channel for the weft, and a stationary blowing nozzle which is in position to project a weft thread through such aligned notches when the reed is retracted, wherein the improvement comprises an apparatus for projecting a substantially parallel beam of light which is carried by the reed beam and is arranged to project, through the space between at least two adjacent blades at the end of the reed beam remote from said blowing nozzle, a beam of light covering substantially the entire area of a notch, and a photoelectric receiver comprising a series of light-sensitive elements arranged to receive at least a portion of such beam of light that extends substantially across the width of a notch.

3,853,409
METHOD OF AND APPARATUS FOR GIVING INFORMATION ON THE INK REQUIREMENTS OF A PRINTING FORME

Jean R. Gaillochet, Neuilly, France, assignor to Marinoni, Paris, France

Filed July 13, 1972, Ser. No. 271,555
Claims priority, application France, Aug. 4, 1971, 71.28656
Int. Cl. G01n *21/22*
U.S. Cl. 356—201 11 Claims



1. Apparatus for determining a plurality of settings which control the amount of ink applied to respective circumferential columns of a printing forme used to effect the printing of an image comprising means for supporting an image member having an image thereon corresponding to the image to be printed from said forme, the image on said image member having column areas corresponding to said columns on the forme, a photosensitive area disposed to receive light from said image member with said photosensitive area being large enough to receive the light at one time from the entire area of a plurality of the column areas of the image on the image member, means for directing light onto the whole of a plurality of column areas on said image member, to transmit light to the photosensitive area and to establish over corresponding column areas of the photosensitive area a light intensity which indicates the image density in the corresponding column area of the image member and means for deriving from each of said photosensitive column areas a respective electrical signal depending on the amount of light on the column area.

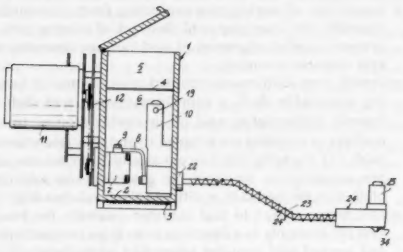
3,853,410
DEVICE FOR DISTRIBUTING HOT-MELT ADHESIVE

Rodolfo Busoni, Via Lazzaretto Vecchio 7, 34123 Trieste, Italy

Filed Oct. 18, 1972, Ser. No. 298,615
Claims priority, application Italy, Oct. 22, 1971, 30200/71
Int. Cl. A46b *11/08*
U.S. Cl. 401—1 10 Claims

1. A device for distributing a hot-melt adhesive, comprising reservoir means defining an interior chamber for containing a supply of hot-melt adhesive, nozzle means for applying the hot-melt adhesive to a desired location, and supply means communicating on the one hand with said chamber and on the other hand with said nozzle means for continuously urging the hot-melt adhesive to flow from said reservoir means to said nozzle means, said supply means including a flexible hose operatively connected with said nozzle means so that the latter may be freely moved with respect to a surface to which the hot-melt adhesive is distributed, said nozzle means including a housing, a combined valve and nozzle unit shiftable with respect to said housing between a closed position preventing the adhesive from issuing from said nozzle means and an open

position opening said nozzle means to permit the adhesive to be distributed by said nozzle means, spring means urging said unit to its closed position, and means operatively connected



with said nozzle means for shifting said unit in opposition to said spring means from said closed to said open position thereof.

3,853,411

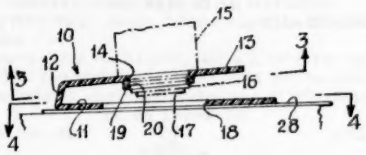
SUPPORT DEVICE FOR MARKING IMPLEMENTS

Santo Ciraolo, 934 Hutchinson Ct., Brooklyn, N.Y. 11223

Filed Aug. 9, 1973, Ser. No. 386,937

Int. Cl. B43k *5/00*

U.S. Cl. 401—48 **11 Claims**



1. A resilient support device for generally cylindrical marking implements of the type having means at one end for applying an indicium to a surface axially contacted thereby, said support device comprising a planar base adapted for placement on a horizontal support surface, the length and width of said base being less than three times the diameter of such cylindrical marking implement; a vertical member at one end of said base; a top, planar member extending from the upper end of said vertical member in general alignment with and at a slight upward angle to said base, said top member having an aperture formed therein for receiving the applicator end of a marking implement; and, means for removably securing a marking implement within said aperture such that the applicator end of said marking implement protrudes below said top member spaced upwardly from said base, and said base having an enlarged opening formed therein in general, vertical alignment with said aperture such that downward flexure of said top member permits the applicator end of a marking implement secured thereto to contact a surface beneath said base through said enlarged opening.

3,853,412

TOOTH CLEANING BALL

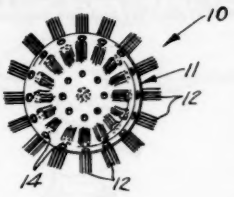
Gerald D. Griffin, 2301 Birchmont, Benidzi, Minn. 56601

Filed June 26, 1973, Ser. No. 373,804

Int. Cl. A46b *11/02*

U.S. Cl. 401—183 **2 Claims**

1. A tooth cleaning ball device comprising a spherical and resilient body which is chewable and disposable, said body carrying bristles for use in conjunction with a self-contained and self-dispensed dentifrice within said body, said bristles being grouped in an equally spaced apart arrangement, said groups of bristles being imbedded within said resilient body, said bristles being radially spaced apart so as to effectively clean a person's teeth when said device is chewed upon within the oral cavity, wherein said body of said device is provided with a plurality of spaced apart openings, said spaced apart openings being alternate with said groups of bristles radially



carried by said body of said device, and said openings provide a means for automatically dispensing of the dentifrice from the interior of said body, said dentifrice being urged out of said openings by the chewing action placing pressure upon said body of said device when it is chewed.

3,853,413

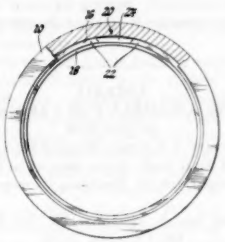
SNAP RING LOCKING DEVICE

Mario A. Parran, Norwalk, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 7, 1974, Ser. No. 440,453

Int. Cl. F16d *1/06*

U.S. Cl. 403—318 **2 Claims**



1. A snap ring locking device comprising:

a member having an internal groove opening into a bore of the member,

a resilient snap ring peripherally seated in said internal groove and protruding radially inwardly of said bore, said ring having an outer rabbet at each end, and

a permanently deformed key disposed in said internal groove and engaging the ends of said resilient snap ring to retain said resilient snap ring peripherally seated in said groove,

said key having an inner rabbet at each end and interlocking with said ends of said snap ring for radially retaining said key in said groove between the ends of said snap ring.

3,853,414

BALL JOINT APPARATUS

Koki Hirano, Fujisawa, and Kyoji Kobayashi, Chigasaki, both of Japan, assignors to Jidosha Denki Kogyo Kabushiki Kaisha, Kanagawa-ken, Japan

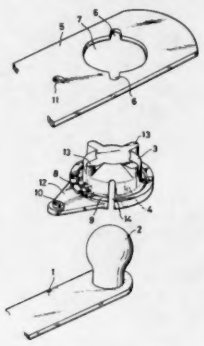
Filed Apr. 25, 1972, Ser. No. 247,276

Int. Cl. F16c *11/06*

U.S. Cl. 403—71 **8 Claims**

1. A ball joint assembly comprising a socket member, a first link including a ball stem adapted for insertion in said socket member, said socket member including a projecting member and a receiving flange spaced from one another, and a second

link having an opening through which said socket member is insertable with the ball stem engaged in said socket member, such that said second link can be brought to a position between the projecting member and receiving flange, and coupling means on said socket member and second link for holding the same together and preventing relative rotation therebetween, said coupling means being operatively engaged by turning the socket member and link relative to one another



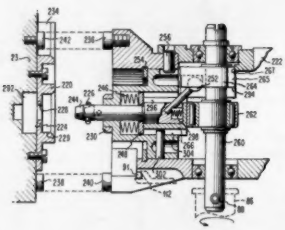
after insertion of the socket member in said opening, said coupling means including a resilient arm member extending radially from said flange and including a portion remote from said flange facing the second link, and a projection extending between said second link and resilient arm member at said facing location resiliently bearing between these elements when the socket member is inserted in said opening in said second link.

3,853,415

COUPLING ASSEMBLY FOR CARRIAGE AND ACTUATOR

Cecil Percy Barnard, Los Gatos; Richard Burke Mulvany, and Albert Daniel Rizzi, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 6, 1972, Ser. No. 303,748
Int. Cl. A44b *17/00*
U.S. Cl. 403—322 **9 Claims**



1. An assembly for coupling a linear drive actuator assembly and a carriage assembly for conjoint linear travel, said actuator assembly comprising:

a key pin assembly having a crosspin formed at one end;

a pilot element disposed closely to said key pin assembly and facing said carriage assembly;

a first set of mating pins projecting from said actuator assembly towards said carriage assembly;

said carriage assembly comprising: a latch plate connected to one end of said carriage assembly, the latch plate having a mating surface including a pilot hole for engaging and initially locating said key pin assembly, and a guide formed with a clearance slot and a top guide slot for engaging said pilot element and for providing final alignment and engagement of said key pin assembly;

a second set of mating pins projecting from said carriage assembly for engaging said first set of mating pins to provide parallel alignment of said carriage assembly and said actuator assembly;

eccentric cam shaft means coupled to said actuator including a rotatable shaft, a cam formation on said shaft for linearly reciprocating said pin assembly relative to said carriage, a coupling pin coupled to and movable with said shaft and engaging said key pin assembly for rotating said pin assembly, so that said pin assembly and said latch plate may be joined in a stiff and fixed relationship;

spring means joined to said actuator assembly for biasing said pin assembly in a direction away from said latch plate and toward said actuator when said latch plate and pin assembly are joined, the bias force of said spring means being greater than the acceleration forces experienced by said actuator and carriage when joined for linear travel; and

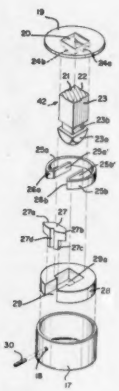
means connected to said eccentric shaft for unloading the spring bias force during rotation of said pin assembly relative to said latch plate.

3,853,416

JOINT ASSEMBLY FOR A LOCK STRUCTURE

Abraham Hanan, P.O. Box No. 119, Brooklyn, N.Y. 11223

Filed May 14, 1973, Ser. No. 360,103
Int. Cl. F16d *1/06*
U.S. Cl. 403—322 **7 Claims**



1. A lock device comprising in combination: an elongated squared shaft of substantially square cross-section defining along an elongated axis thereof an indentation slot defined by recessed substantially flat-faced upright recessed walls outwardly facing from one-another located adjacent and above a substantially horizontal substantially flat-faced step-wall preventing withdrawal of the shaft; a shaft-receiving hole-structure means defining a receptacle, said hole-structure means being substantially square in cross-section and surrounding a terminal end of the squared shaft and a pair of opposing downwardly-turned upright sidewardly inwardly-facing flat-faced channel-defining spaced-apart walls, said hole-structure means further defining an enclosure space; and key means including a unitary spring-annulus having at a first location substantially parallel radially inwardly extending spring-biasing locking-legs extending substantially horizontally and having substantially upright leg flat faces positioned on opposite sides of and substantially perpendicular to said

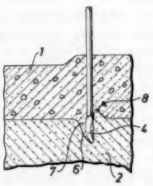
pair of downwardly-turned upright flat faced walls such that the flat faces of the locking-legs extend substantially parallel to and snap against the opposite edges of said flat-faced channel-defining spaced-apart walls when the elongated squared shaft is inserted into the hole-structure means' receptacle, said enclosure space being defined by containing and substantially circumscribing walls of the hole-structure means, the unitary spring-annulus being loosely mounted within the enclosure space, the circumscribing wall having in a side wall thereof a key-aperture extending therethrough of small predetermined size having a key inserted therein, and a movably mounted slide-element mounted within the enclosure space mounted adjacent said spring annulus at said first location, one end of the slide element being substantially wedge-shaped and an opposite end thereof facing radially outwardly adjacent and opposite to an inner end of said key-aperture, the wedge-shaped end being positioned between a first predetermined part of the flat-faces of the locking-legs at said first location such that said key when inserted and pressed through said key-aperture causes said wedge-shaped end to press-apart the locking-legs from one-another as the slide-element is slid radially inwardly in a direction between the locking-legs whereby the shaft when already inserted may be removed.

3,853,417

APPARATUS FOR ANCHORING A CEMENT CONCRETE BODY SUCH AS A ROADWAY ONTO A BASE OF SAND, GRAVEL, SOIL OR SIMILAR MATERIAL

Gunnar Otto Hugo Olsson, Vibblabyvagen 16, Jakobsberg, Sweden

Division of Ser. No. 231,297, March 2, 1972, Pat. No. 3,810,708. This application Feb. 22, 1974, Ser. No. 445,034
Claims priority, application Sweden, Mar. 4, 1971, 2804/71
Int. Cl. E01c *21/00*
U.S. Cl. 404—90 **4 Claims**



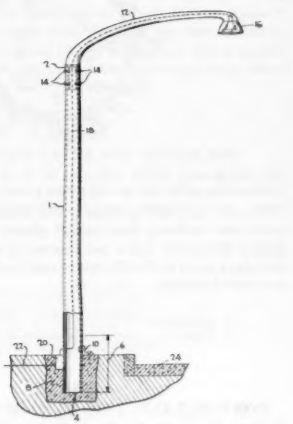
1. An apparatus for anchoring a cement concrete body in a base of sand, gravel, soil, or similar material to bring about a uniform distribution of cracks of contraction coming to existence in the body in connection with the hardening of the cement concrete, said apparatus including at least one rod-shaped hole forming device (**3**), characterized in that the hole forming device is articulately fixed to an apparatus (**10**) adapted to travel on the cement concrete layer (**1**), that driving means (**22, 15, 19**) are devised to adjust the hole forming device (**3**) with the longitudinal axis thereof inclined to the upper surface of the cement concrete layer and to impart to the hole forming device an axial, downwards directed movement and to drive said device through the cement concrete layer (**1**) into the base (**2**) to the depth corresponding to the density of the base and then to impart to the device a turning movement about the lower end of said device and after that the longitudinal axis of said hole forming device has been turned to a predetermined extent to retract said device out of the base and the cement concrete layer.

3,853,418

SAFETY SUPPORT FOR USE ADJACENT A VEHICULAR TRAFFICWAY

Melvin L. Druin, West Orange, and Paul E. McMahon, North Plainfield, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Feb. 28, 1973, Ser. No. 336,674
Int. Cl. E04c *3/06, 12/12*
U.S. Cl. 404—1 **11 Claims**



1. A vehicular traffic system exhibiting improved safety characteristics comprising:

a. substantially vertical article bearing means for the support of lighting fixtures, traffic control indicia, utility lines, and the like, comprising a high strength elongated tubular member having an upper end and a lower end, a thin wall thickness, and the ability to undergo catastrophic rupture when struck laterally by a moving vehicle, wherein the wall of said tubular member comprises (*a*) about 35 to 70 per cent by volume of a resinous matrix, and (*b*) about 30 to 65 per cent by volume of pyrolyzed carbonaceous fibers containing at least 90 per cent carbon by weight incorporated within said resinous matrix,

b. a vehicular trafficway, and

c. mounting means positioned adjacent said trafficway in engagement with the lower end of said substantially vertical article bearing means, with said mounting means exhibiting no substantial impediment to the movement of a vehicle.

3,853,419

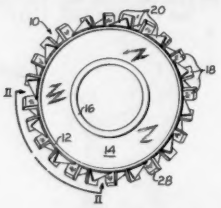
COMPACTOR WHEEL CONFIGURATION

August H. Bertram, Aurora, and Andrew J. Gorski, Naperville, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 21, 1973, Ser. No. 372,412
Int. Cl. E01c *19/26*
U.S. Cl. 404—121 **8 Claims**

1. A compactor wheel comprising a cylinder defining an axis of rotation and a diameter, a plurality of chopper blades successively mounted around the periphery of said cylinder, each of said blades being oriented at an angle to said cylinder axis and extending only part way across said cylinder, each of said chopper blades being in the form of a rectangularly shaped plate member having dimensions of height, length, and thickness, each of said blades defining a pair of parallel planar side surfaces intersecting a radially outermost length edge defining an edge surface perpendicular to said side surface, each of said chopper blades being secured to the cylinder

periphery along a radially innermost length edge so that the blade extends radially outwardly from said cylinder, the radially outermost length edge having a beveled surface thereon intersecting with only one of said side surfaces and said edge surface to produce a cutting edge thereon so as to ensure



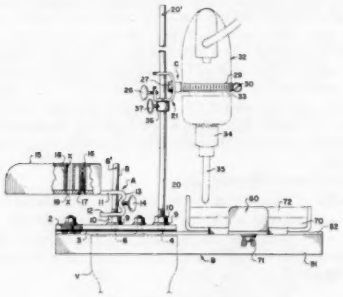
penetration sufficient to chop tree roots, loosen soil, and crush debris, and further including a reinforcing gusset of pyramidal shape and defining four angled planar faces, one of which abuts a respective blade and another of which abuts the wheel periphery so as to fixedly retain said blade with respect to said peripheral surface.

3,853,420

PORTABLE ELECTRIC HAND DRILL ACCESSORY

Andrew T. Abell, 21 Gateway Rd., New Wilmington, Pa. 16142

Filed June 6, 1973, Ser. No. 367,328
Int. Cl. B23b *45/14*
U.S. Cl. 408—14 **15 Claims**



1. An electric hand drill-holding and guiding accessory comprising:

a. a base panel;

b. a post on the base panel;

c. means for slidably supporting an electric drill on the post comprising an adjustable band arranged to be clamped about an electric hand drill;

d. an internally-threaded element secured to the band;

e. a slide member slidably and rotatably fitted on the post comprising a yoke having opposite end portions through which the post extends joined by a longitudinally-slotted curved connecting portion at one side of the post which passes through the said end portions, and

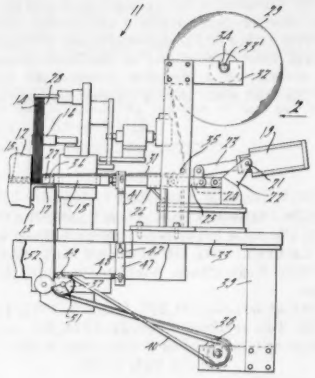
f. a bolt passing through the slot in said connecting portion and screwed into said internally-threaded element on the band whereby the drill-holding clamp is adjustably fixed on said curved connecting portion for movement in an arc such that the lower end of a drill bit in the electric hand drill may be adjusted toward or away from the post and the electric hand drill also adjusted in an arc about said bolt as a pivot.

3,853,421

PAPER DRILLING MACHINE

Albert E. Sickinger, Bloomfield Hills, Mich., assignor to Hans Sickinger Company, Pontiac, Mich.

Filed Feb. 16, 1973, Ser. No. 333,065
Int. Cl. B23b *39/16, 47/00*
U.S. Cl. 408—52 **3 Claims**

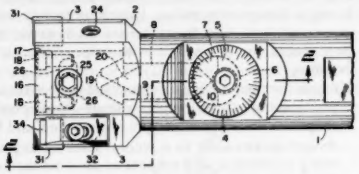


1. In a drilling machine for forming a row of holes in the edges of paper stacks, said row having a predetermined length, a stationary member having an elongated surface against which an edge portion of the stack is to be directly clamped, a row of drills guided in said stationary member for movement between a retracted position and a position passing through said elongated surface and penetrating all the sheets, a movable member carrying an elongated wooden backup block and reciprocable between a retracted position and a position in which said block is forced against said edge portion of the stack and said edge portion directly engages said stationary member, said drills entering backup holes in said block after it has passed through the sheets, and means for preventing the formation of a ragged hole edge on the last sheet of the stack engaging said block due to undue enlargement of said backup holes, said means comprising a supply of paper having a width greater than said predetermined row length, mounting means for said paper supply adjacent said members and spaced therefrom in a direction perpendicular to the extent of said row of holes, a paper-storing takeup roll mounted adjacent said members on the opposite side thereof from said paper supply mounting means, means guiding said paper in said perpendicular direction through the space between said block and said last sheet and thence to said takeup roll, means for indexing said paper in increments in response to retraction of said movable member so that an undrilled portion of the paper will overlap said backup holes, whereby any ragged edges will be formed in said indexable paper rather than in said last sheet, said indexing means comprising a one-way clutch connected to a guide roll for said paper past the location of said drills, a lever interconnecting said one-way clutch with said movable member, and driving means interconnecting said guide roll and take-up roll, whereby retraction of said movable member will advance said paper.

3,853,422
ADJUSTABLE BORING BAR

Milton L. Benjamin, and Wilbur N. Miles, both of Chagrin Falls, Ohio, assignors to Erickson Tool Company, Solon, Ohio

Filed Nov. 2, 1973, Ser. No. 412,204
Int. Cl. B23b *29/034*
U.S. Cl. 408—161 **3 Claims**

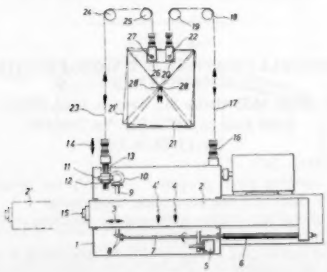


1. An adjustable boring bar comprising a bar having a longitudinal bore intersected by a transverse slot of rectangular cross-section and by a transverse bore; a pair of cutter elements having rectangular shank portions slidable in said slot and having cutting edges at their radially outer extremities; screw actuated cam means in said transverse bore; a cam plunger movable lengthwise in said longitudinal bore and having engagement with said cam means and with said cutter elements to move the latter in said transverse slot responsive to actuation of said cam means; clamp screw means in said bar operative to flex the slotted portion of said bar to firmly clamp said shank portions together in predetermined adjusted relation; said transverse slot comprising a groove in the end portion of said bar which defines the opposite side walls and one end wall of said slot; a cap member secured on the end of said bar to close said groove to form the other end wall of said slot; and screw means eccentrically disposed with respect to said clamp screw means for securing said cap member to said bar whereby tightening of said clamp screw means flexes the opposite side walls of said slot toward each other into clamping relation with the overlapped shank portions of said cutter elements therebetween.

3,853,423
HORIZONTAL DRILLING AND MILLING MACHINE WITH A HEADSTOCK MOVABLE UPWARDLY AND DOWNWARDLY ON GUIDING MEANS

Paul Quack, Rheydt, Germany, assignor to Scharmann & Co., Rheydt, Germany

Filed Sept. 25, 1972, Ser. No. 292,261
Claims priority, application Germany, Sept. 25, 1971, 2147985
Int. Cl. B23b *47/26*
U.S. Cl. 408—235 **4 Claims**

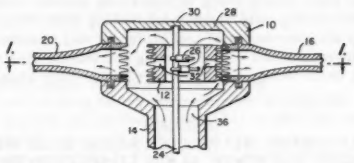


1. In a horizontal drilling and milling machine, a vertical support, a headstock assembly comprising a saddle member guided for vertical movement on said support, and a tool holding sleeve means horizontally displaceable in said saddle member, a counterweight, at least two flexible means on said support for connecting the counterweight to said saddle member for vertically balancing said assembly in a substantially transverse vertical plane containing the center of gravity of said assembly, actuating means to move said sleeve means of said headstock assembly horizontally in said saddle member, and transmission means including at least one rotatable means connected to at least one flexible means for interconnecting said actuating means and at least one of said flexible means to effect a variation in length of said at least one flexible means in response to the movement of said supporting sleeve relative to said headstock assembly to maintain said supporting sleeve in a predetermined horizontal orientation.

3,853,424
LABYRINTH AIR VALVE FOR ROTOR HUB

Henry J. Bernaerts, R. F. D. 10, Box 1610, Annapolis, Md. 21401

Filed July 18, 1973, Ser. No. 380,322
Int. Cl. B64c *27/18*
U.S. Cl. 416—20 **14 Claims**

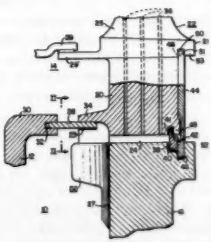


1. A rotor hub for a circulation control helicopter rotor comprising:
an inner member;
a rotating outer member surrounding said inner member and spaced therefrom to form a fluid flow passage;
fluid receiving means in said rotating member; and
sealing means between said inner member and said fluid receiving means, said sealing means comprising a labyrinth seal.

3,853,425
TURBINE ROTOR BLADE COOLING AND SEALING SYSTEM

Augustine J. Scalzo, Philadelphia, and Leroy McLaurin, Springfield, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 7, 1973, Ser. No. 395,316
Int. Cl. F01d *5/18*
U.S. Cl. 416—95 **5 Claims**



1. A rotor assembly for an axial flow gas turbine comprising: a plurality of rotor blades, each blade having an airfoil portion, a root portion, and a platform therebetween, at least one rotatable turbine rotor or disc having a plurality of side entry

channels spaced on the periphery thereof for receiving the root portions of blades, a chamber axially disposed radially inwardly of and adjacent the root portions of the blades, a plurality of radially directed cooling fluid flow passageways extending from the root portion through the airfoil portion of the blade, said passageways being in fluid communication with said axially disposed chamber, a generally radially directed groove disposed on the upstream side of the rotor, said groove being in fluid communication with said axially disposed chamber, said groove comprising a pumping means during rotor rotation to draw cooling fluid from a source, forcing said fluid through said axially disposed chamber and into said radially directed passageways, said fluid being discharged from the radially outermost end of said passageways in the airfoil portions of the blade, plate means for sealing the chamber downstream, said plate means being notched to interlock with a mating tab on the downstream end of the blade root, said plate means being disposed in a peripheral groove near the downstream side of said disc, exhaust sealing and locking plate means disposed on the downstream side of the blade root, said exhaust sealing and locking plate means being supported inwardly by a peripheral groove on the downstream edge of the disc and supported outwardly by an inwardly facing groove in an extension of the blade platform, said sealing and locking plate means being in restraining contact with said chamber sealing plate means, said locking plate means preventing axial movement of said blade and said chamber sealing plate means, said exhaust sealing and locking plate means sealing the downstream portion of said side entry channels.

3,853,426

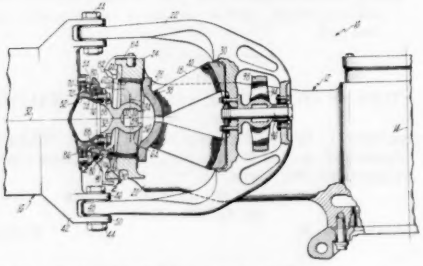
ELASTOMERIC HELICOPTER ROTOR HEAD WITH DYNAMIC AND STATIC BLADE CONING AND DROOP STOPS

Robert C. Rybicki, Trumbull, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Continuation-in-part of Ser. No. 286,508, Sept. 5, 1972, abandoned. This application Aug. 29, 1973, Ser. No. 392,825

Int. Cl. B64c *27/38*

U.S. Cl. 416—140 **30 Claims**



1. An articulated helicopter rotor including:

A. a rotor hub adapted to be mounted for rotation,

B. at least one helicopter blade projecting substantially radially from said hub and having a pitch change axis, a lead-lag axis and a flapping axis intersecting at a common point,

C. means supporting said blade from said hub for universal motion about the intersection of said axes,

D. a ring member mounted on said blade for rotation relative thereto about said pitch change axis and at a station radially outward of said point of intersection and having:

1. a conically shaped surface positioned to move toward said hub as said blade droops downwardly,

E. a droop stop member including:

1. a frame means connected to said hub,

2. dynamic droop stop means supported by said frame means and having a barrel shaped surface concentric with respect to the lead-lag axis and positioned and shaped to matingly engage said conically shaped surface of said ring member when said blade droops downwardly to a selected first angle, and so that said matingly engaged surfaces will continue in mating engagement without affecting blade pitch or downward droop angle as the blade moves in lead-lag motion about the lead-lag axis, due to the continuous rolling contact between said matingly engaged surfaces of said rotatable ring member and said dynamic droop stop means,

3. static droop stop means loosely pivotable on and supported from said frame means or dynamic droop stop means for movement with respect thereto and including:

a. a cam member having a conically shaped surface and positionable to matingly engage said conically shaped surface of said ring member when said blade droops downwardly to a second selected angle, and being concentric with respect to the lead-lag axis so that said matingly engaged surfaces of said rotatable ring member and said cam surface remain in mating engagement without affecting blade pitch, blade downward flap or droop angle, and without preventing independent blade pitch change as said blade moves in lead-lag motion about said lead-lag axis, due to the continuous rolling contact established between said matingly engaged surfaces of said ring member and said cam surface,

b. a barrel shaped surface corresponding in shape to said barrel shaped surface of said dynamic droop stop means,

c. counterweight means connected to said cam member so that when said blade is operating at low rotational speed or is stopped, said conically shaped surface of said cam member matingly engages the conically shaped surface of said rotatable ring member when said blade and rotatable ring member flap downwardly to said selected first angle so as to, due to the loose pivot connection between said static droop stop means and said frame means, or dynamic droop stop means to thereby cause said barrel shaped surface of said cam member to engage said barrel shaped surface of said dynamic droop stop means in mating engagement so that blade loading is imparted through said static droop stop means and said dynamic droop stop means and said frame means to said hub, and so that when rotor speed increases, said counterweight means will cause said cam member to move in response to centrifugal force from between said conically shaped surfaces of said ring member and said dynamic droop stop means to permit a greater degree of downward blade droop motion to a second selected angle before said conically shaped surfaces of said ring member and said dynamic droop stop means barrel shaped surface matingly engage to impart blade loads through said dynamic droop stop means and said frame means to said hub.

3,853,427

MANUALLY CONTROLLED VARIABLE PITCH PROPELLER

Frank G. Holt, 6652 Moore St., Arvada, Colo. 80002

Filed June 26, 1972, Ser. No. 266,435

Int. Cl. B63h *3/04*

U.S. Cl. 416—167 **4 Claims**

1. A variable pitch propeller assembly for mounting on the drive shaft of a marine engine comprising:

a. a tubular hub means arranged for securing on the drive shaft for rotation therewith,

b. said hub means having a radially depending flange at one end thereof,

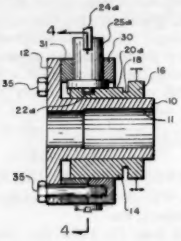
c. a plurality of propeller blades, each blade having a mounting shaft and a flange at the end of said shaft opposite said blade,

d. the outer surface of said flange having a stud extending outwardly therefrom which is arranged eccentric to the rotative axis of said blade shaft,

e. a pair of blade mounting rings having a common interface and arranged to be fixedly attached to the outer edge of said hub radial depending flange,

f. a plurality of radial bores for said propeller blandes disposed at the interface of said pair of rings, said radial bores being equi-angularly spaced around the circumference of said rings and sized to rotatively mount the blade shafts therein,

g. a cylindrical sleeve arranged to be slidably mounted on the outer surface of said hub means and arranged to have a flat outer surface corresponding to the flange of each of the propeller blades, a laterally extending groove being



provided in each of the flat surfaces of said sleeve having the eccentric stud on the flange of said blades engaged therein whereby as the sleeve is moved longitudinally with respect to said hub the angular pitch of said blades can be simultaneously adjusted to any position between a forward drive position and a reverse drive position,

h. one end of said sleeve including an exposed circumferential groove therein spaced from the edge of said sleeve, and

i. a manual control lever having a yoke at one end disposed so that said yoke is positioned in said sleeve groove for longitudinally shifting said sleeve and varying the pitch of said propeller blades while the assembly is being rotated by said drive shaft.

3,853,428

FOIL STRUCTURES WITH REDUCED SOUND GENERATION

Richard Earle Hayden, Arlington, Mass., and Robert Charles Chanaud, Boulder, Colo., assignors to Inc. Bolt Beranek and Newman, Cambridge, Mass.

Division of Ser. No. 221,223, Jan. 27, 1972, Pat. No. 3,779,338. This application Sept. 21, 1973, Ser. No. 399,453

Int. Cl. F01d *5/14*

U.S. Cl. 416—231 **7 Claims**

1. For use as rotors, stators, flaps and the like in a fluid-flow medium, a foil structure having means for reducing the flow impedance of at least one of leading and trailing edge portions of the foil surfaces to a value substantially closer to the characteristic impedance of the medium and at which the flow impedance and the characteristic impedance are substantially matched.

3,853,429

MOTOR PUMP COMBINATION

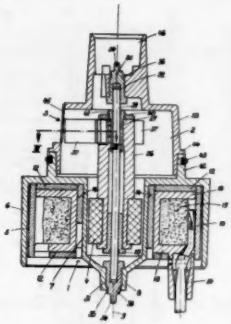
Walter Wiedenmann, Kongen, Germany, assignor to Gunther Eheim, Esslingen, Germany

Filed June 28, 1973, Ser. No. 374,750

Claims priority, application Germany, Sept. 14, 1972, 2245009

Int. Cl. F04b *17/00*

U.S. Cl. 417—356 **18 Claims**



1. Motor-pump combination comprising

a plastic housing having one portion (**6**) in which the motor is located and another portion (**33**) in which the pump is located;

a pump impeller (**3**) in the pump portion coupled to the rotor (**4**) of the motor (**1**), wherein said motor is a self-starting synchronous motor, and the rotor (**4**) is a permanent magnet rotor;

the motor portion of the housing being formed in cup-shaped configuration having an inner sleeve (**7**) closely surrounding the rotor and leaving an air gap therebetween;

bearing means (**8, 30, 29, 28; 27, 32**) journalling the rotor in the sleeve to permit rotation of the rotor relative to the sleeve;

a stator (**5**) having a stator winding (**19**) therein, a pair of disks (**12**) of magnetizable material located at the end faces of the winding, an outer sleeve (**10**) of magnetic material surrounding the winding and being in magnetic flux transfer with said disks;

and inner pole shoes (**14**) of asymmetrically shaped cylindrically bowed strips, alternately connected in flux transfer to one and the other of said disks (**12**) and facing the outer wall of said inner cylindrical sleeve (**7**) of plastic material to permit interaction of the permanent magnet rotor, through the plastoc material, with the rotational field generated by the asymmetric pole shoes, alternately connected to one and the other of said end disks (**12**), and to provide for self-starting operation of the motor and synchronous operation after synchronous speed has been reached.

3,853,430

CABLE-SUSPENDED, LINER-SUPPORTED SUBMERSIBLE PUMP INSTALLATION WITH LOCKING DISCHARGE HEAD

John C. O'Rourke, Bartlesville, Okla., assignor to TRW, Inc., Cleveland, Ohio

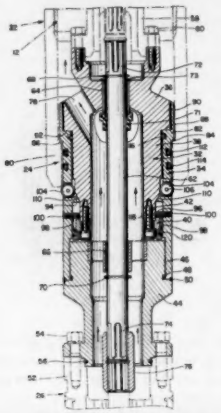
Filed Aug. 8, 1972, Ser. No. 278,741

Int. Cl. F04d *29/60, 29/62;* **E21b** *23/00*

U.S. Cl. 417—360 **14 Claims**

1. Apparatus for providing a suspended pump installation in a well casing, comprising a submergible pump having a discharge head, means for suspending the pump in the well casing, said discharge head having means for automatically locking the head within the well casing when the head is lowered

to its operative position and having means for sealing the head within the well casing at said position to provide a high pressure region above the sealing means and a low pressure region below the sealing means, said discharge head having a discharge port at the high pressure region and said pump having an intake at the low pressure region, said discharge head having an outer member and an inner member coupled to the outer member for limited reciprocative movement, said outer member having means for supporting it in said well casing at



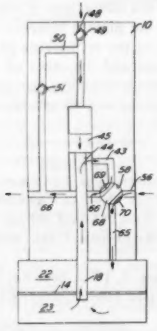
said operative position, said locking means comprising locking elements and means for projecting said locking elements from said discharge head toward said well casing in response to downward movement of said inner member relative to said outer member when said outer member is supported at said operative position, said discharge head having additional sealing means between said outer and inner members for isolating said locking elements from the high pressure discharge of said pump while permitting relative reciprocation between said outer and inner members.

3,853,431

MIXING PUMP

Steven E. Goodhart, 4 Windy Rd., Brandywood, Wilmington, Del. 19810

Filed Aug. 8, 1973, Ser. No. 386,784
Int. Cl. F04b *17/00, 35/00*
U.S. Cl. 417—403 **8 Claims**



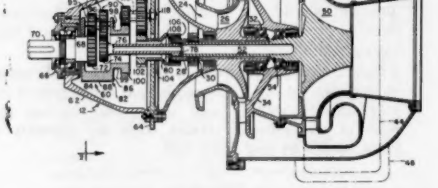
1. A mixing pump for fluids comprising
a body,
a supply connection to a primary fluid under pressure connected to said body,
a supply connection to a secondary fluid connected to said body,
a delivery connection,
a pressure fluid responsive diaphragm carried by said body,
a secondary fluid pump piston in said body and having a predetermined stroke,
an operating member comprising a tube between said diaphragm and said pump piston and in communication with one side of the diaphragm for supply of fluid to and delivery of fluid thereform for moving said piston upon movement of said diaphragm,
a valve member controlling the supply of primary fluid alternately against each side of said diaphragm and delivery of primary fluid from the opposite side of said diaphragm to said delivery connection,
valve operating mechanism controlled by the positioning of said operating member for shifting said valve member,
said body having a chamber in which said piston is movable, said chamber having said secondary fluid supply connection connected thereto through a non-return valve and being connected to said delivery connection through a non-return valve.

3,853,432

DIFFERENTIAL GAS TURBINE ENGINE

Val Cronstedt, Williamsport, Pa., assignor to Avco Corporation, Williamsport, Pa.

Filed Aug. 29, 1973, Ser. No. 392,566
Int. Cl. F04b *17/00*
U.S. Cl. 417—405 **9 Claims**



1. A gas turbine engine comprising:
a generally annular housing;
independent rotatable and coaxial compressor and turbine rotors journaled in said housing;
an input sun gear connected to said turbine shaft;
a power output shaft journaled in said housing and having an output sun gear having external teeth secured thereto, said output gear being adjacent said input sun gear;
a generally annular planet carrier positioned around said sun gear;
a first gear train consisting of a set of planet gear assemblies having external teeth rotatably mounted in said carrier, each planet gear assembly comprising a first gear engaging said sun input gear and a second gear engaging said output sun sun gear, both gears connected to permit the transfer of torque from one to the other;
a ring gear on said planet carrier, said ring gear having external teeth;
a drive input sun gear mounted on said compressor shaft and having external teeth, said compressor shaft being adjacent said ring gear; and
a second gear train consisting of a set of gear assemblies having external teeth and journaled about axes fixed relative to said housing, each assembly having a first gear engaging said compressor drive sun gear and a second gear engaging said ring gear, both gears connected to permit the transfer of torque from one to the other.

3,853,433

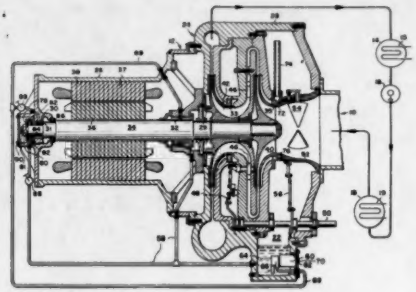
REFRIGERATION COMPRESSOR DEFINING OIL SUMP CONTAINING AN ELECTRIC LUBRICANT PUMP

John H. Roberts, and Gordon L. Temp, both of La Crosse, Wis., assignors to The Trane Company, La Crosse, Wis.

Continuation of Ser. No. 286,806, Sept. 6, 1972, abandoned. This application Mar. 25, 1974, Ser. No. 454,304

Int. Cl. F04b *17/00*

U.S. Cl. 417—423 **4 Claims**



1. A refrigerant centrifugal compressor comprising: a compressor housing; a shaft disposed within said housing; bearing means for rotatably supporting said shaft in said housing; a centrifugal type fluid impeller disposed within said housing and mounted for rotation with said shaft; an annular inlet member disposed within said housing to conduct fluid to the inlet of said impeller and coaxially arranged with respect to said shaft; a plurality of inlet control vanes disposed in said inlet member; portions of said inlet member being radially inwardly spaced from said housing thereby defining a substantially annular cavity between and axially coextensive with said compressor housing and said inlet member; a lubrication system for said compressor including first conduit means for conducting lubricant to said bearing means; and second conduit means for draining lubricant from said bearing means to said annular cavity whereby said annular cavity defines as a lubricant sump; means for mechanically adjusting said control vanes disposed within said cavity; passage means for venting the upper portion of said cavity to the inlet of said compressor; and pressurizing means for pressurizing lubricant from said sump and returning pressurized lubricant to said bearing means via said first conduit means.

3,853,434

POSITIVE DISPLACEMENT ROTARY MACHINE

Frederick L. Parsons, 759 Morningside Rd., Ridgewood, N.J. 07067

Division of Ser. No. 132,140, April 7, 1971, Pat. No. 3,741,694. This application May 17, 1973, Ser. No. 361,254

Int. Cl. F01c *1/02*

U.S. Cl. 418—55 **2 Claims**

1. A compressor comprising:

a housing having a generally cylindrical internal wall,

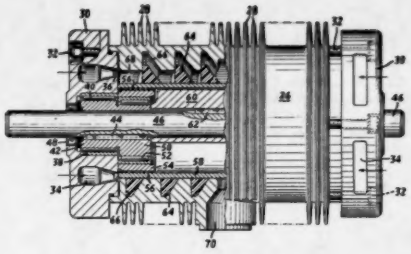
a fluid inlet and a fluid outlet in the housing spaced along the length thereof,

a generally helical cavity in the internal housing wall extending between the inlet and the outlet, the cavity having an outwardly converging generally V-shaped cross section;

a generally helical vane received in the cavity throughout substantially the full length thereof, the vane having an outwardly converging generally V-shaped cross section of an external diameter greater than the internal diameter of the internal housing wall but less than the external diameter of the cavity and of a width in radial dimension at least as great as the cavity is deep,

means restraining rotational movement of the vane relative to the cavity while permitting nutating movement therebetween,

a generally cylindrical sleeve positioned within the vane for engagement with the inner surface thereof,



a drive shaft generally concentric with the housing internal wall, and

an eccentric mounted on the drive shaft for rotation therewith, the sleeve being supported on the external wall of the eccentric in concentric relation therewith, whereby upon rotation of the shaft the sleeve is caused to impart nutating motion to the vane within the cavity so as to displace fluid spirally from the inlet to the outlet.

3,853,435

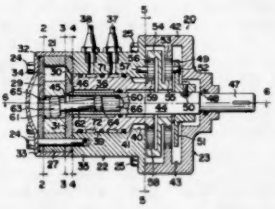
GEROTOR DEVICE WITH GEAR DRIVE FOR COMMUTATOR VALVE

Fumio Ogasahara, Matsudo; Seiji Komamura, and Katsukuni Kabuto, both of Tokyo, all of Japan, assignors to Kayabakogyokabushikikaisha, Tokyo, Japan

Filed Nov. 3, 1972, Ser. No. 303,506

Int. Cl. F01c *1/02;* **F04c** *1/02;* **B62d** *5/00*

U.S. Cl. 418—61 B **4 Claims**



1. In a hydraulic apparatus, a combination comprising a housing having a fluid supply port and a fluid discharge port; a gerotor in said housing and including a stator, and a rotor which is rotatable relative to said stator and has a low-pressure zone and a high-pressure zone;

a commutator valve rotatably received in said housing and having two cavities indexed to face said high-pressure and low-pressure zone and being in communication with said fluid supply port and said fluid discharge port, respectively;

a main shaft extending through and defining an axis of rotation for said commutator valve;

an intermediate shaft having one end connected with said main shaft and another end connected with said rotor for rotation with the same in a first direction and at a first speed; and

gear means connected with said main shaft and said commutator valve and operative for rotating the latter in a direction opposite to said one direction and at a second speed which is greater than said first speed by a fixed ratio.

3,853,436

ROTARY PISTON MACHINE WITH INTERNAL SPLINED SHAFT

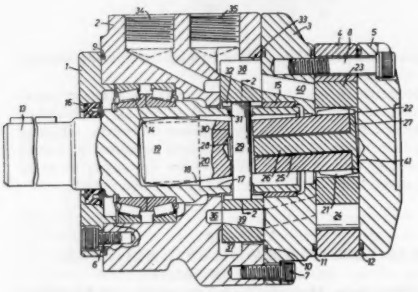
Carl Verner Ohrberg, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed May 31, 1973, Ser. No. 365,435

Claims priority, application Germany, June 19, 1972, 2229629

Int. Cl. F04c *1/16*

U.S. Cl. 418—61 B **6 Claims**



1. A gerotor type rotary piston machine comprising a casing having a main axis, a gerotor gear set having an externally toothed wheel which is rotatable about its own axis and orbitable about said main axis, said wheel being internally splined, an internally splined main shaft rotatable about said axis, a wobble shaft having externally splined front and rear heads at opposite ends thereof in respective splined engagement with said wheel and said main shaft, an annularly shaped valve mounted in said casing for rotation about said main axis, said valve being in surrounding relation to said main shaft and said wobble shaft between the opposite ends thereof, said main shaft and said wobble shaft having aligned and transversely extending cross bores, a diametrically extending drive member attached to said valve and extending through said main and wobble shaft bores, said wobble shaft having a longitudinal bore extending from said cross bore thereof to and through said front head of said wobble shaft, and drive connection means including a keying shaft having a stem mounted in said wobble longitudinal bore which engages said drive member.

3,853,437

SPLIT CYCLE CRYOGENIC COOLER WITH ROTARY COMPRESSOR

Stuart B. Horn, Fairfax, and Buford T. Walters, Woodbridge, both of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 18, 1973, Ser. No. 407,764

Int. Cl. F01c *1/02*

U.S. Cl. 418—61 **2 Claims**

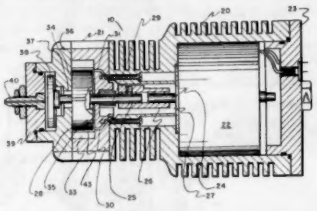
1. A rotary compressor for generating pressure pulses comprising:

a two-lobed chamber;

a rotor positioned in said chamber and coupled to a drive means for rotating said rotor in said chamber in an epitrochoidal path, said rotor having three arcuate sides and dividing said chamber into three volume regions as it revolves;

three ports located in said chamber;

one of said ports, utilize as an output port far said pressure pulses, being located substantially at a perigee of the two-lobed chamber in a region in which said pressure pulses are developed; and with one of each of the other two remaining ports being located respectively in each lobe of the chamber; and



the two remaining ports being angularly spaced about said one of said ports with one of each of the remaining ports being located respectively in each lobe of the chamber and being shorted to a common volume means to prevent pressure increase in the regions of these two remaining ports.

3,853,438

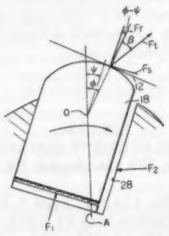
ROTOR AND APEX SEAL ARRANGEMENT FOR A LOBED ROTOR AND HOUSING

Munefumi Sato, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed May 17, 1973, Ser. No. 361,267

Int. Cl. F01c *19/04*

U.S. Cl. 418—113 **1 Claim**



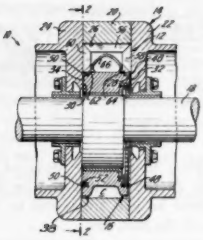
1. In a lobed rotor and lobe apex seal arrangement of a rotary motion device, wherein the rotor is arranged to rotate in an enclosure with apex seals in continuous contact with a trochoidally formed inner wall of the enclosure, the improvement comprising a rounded top surface formed on each apex seal, said each apex seal being inclined in the direction of rotor rotation from a radial center plane in which a radial center line of a respective rotor lobe lies, and the center of curvature of said rounded top surface lying in said radial plane.

3,853,439

APEX SEAL ASSEMBLY FOR ROTARY MECHANISMS

Charles Jones, Hillsdale, N.J., assignor to Curtiss-Wright Corporation, Woodridge, N.J.

Continuation-in-part of Ser. No. 181,084, Sept. 16, 1971, abandoned. This application Mar. 15, 1973, Ser. No. 341,336
Int. Cl. F01c 19/02
U.S. Cl. 418—121 7 Claims



1. An apex seal assembly for a rotary mechanism having a housing with axially spaced end walls and a peripheral wall interconnecting the end walls to form a multi-lobed cavity therebetween and a rotor mounted within said cavity for rotation on an axis eccentric to the housing, the rotor having axially spaced side faces and a peripheral surface consisting of a plurality of circumferential spaced apex portions for forming with the housing walls a plurality of working chambers which vary in volumetric size as the rotor rotates within the housing cavity, the apex seal assembly for each apex portion of the rotor comprises in combination with a side seal ring carried in a circular groove in each end face of the rotor:

a. an apex groove at the apex portion of the rotor extending axially from one side face of the rotor to the other and radially inward to communicate with the circular groove for the side seal ring;

b. a first blade means disposed to extend axially within the apex groove and projecting radially therefrom adjacent said peripheral wall;

c. a second blade means disposed to extend radially within the apex groove and project axially therefrom beyond one of the side faces of the rotor;

d. a third blade means disposed in the apex groove radially inward of said second blade means, and in abutment against the side seal ring in said one of the side faces of the rotor;

e. said second blade means having radially spaced opposite end edge portions which extend axially inward of said one of the side faces of the rotor in a converging direction;

f. the first and third blade means each having an inclined edge portion which is complementary to and in abutment against the converging end edge portions of said second blade means; and

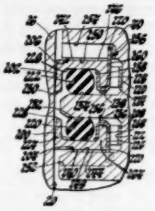
g. a spring for exerting an axially directed force on the third blade means so that the reaction forces between the first, second and third blade means at their abutting edge portions simultaneously urge the third blade means in a radial direction into sealing contact with the side seal ring, the second blade means in axial and radial directions into sealing engagement with the adjacent housing side wall and against the first blade means, and said first blade means in radial and axial directions into sealing contact with the peripheral wall and away from said adjacent housing side wall.

3,853,440

ROTARY ENGINE ANTI-SPIN OIL SEAL ARRANGEMENT

Raymond J. Green, Northville, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Feb. 19, 1974, Ser. No. 443,216
Int. Cl. F01c 19/00; F04c 15/00, 27/00
U.S. Cl. 418—142 2 Claims



1. A rotary engine having a housing with an inwardly facing peripheral wall and oppositely facing inner side walls cooperatively defining a cavity, a crankshaft rotatably supported in said housing, said crankshaft having an eccentric located in said cavity, a rotor rotatably mounted on said eccentric in said cavity, said rotor having sides facing said side walls and peripheral faces facing said peripheral wall defining a plurality of chambers that are spaced about and move with said rotor while varying in volume as said rotor rotates, a circular oil seal groove in each side of said rotor with its center on the rotor axis, a circular oil seal in each said oil seal groove axially movable to sealingly engage the opposing side wall, said oil seal having a backside and oppositely radially facing sides, said oil seal groove having a bottom and oppositely radially facing walls, a wave spring mounted in said oil seal groove engaging said groove bottom and said oil seal backside for biasing said oil seal to normally move axially in said oil seal groove to sealingly engage the opposite housing side wall, an elastomeric seal groove in one of said radially facing sides of said oil seal, said elastomeric seal groove having a radially facing bottom opposite one of the walls of said oil seal groove and radially extending oppositely facing sides, an elastomeric seal mounted in said elastomeric seal groove in said oil seal and engaging the bottom of said elastomeric seal groove and the oppositely radially facing said one wall of said oil seal groove to provide sealing between said oil seal and said rotor while said oil seal sealingly engages the housing side wall, said oil seal having a backside wall between said elastomeric seal groove and said backside, said backside wall having a notch in the sealed radially facing side of said oil seal, an anti-spin clip having a pair of legs clamping said backside wall and a base that joins said legs fully received in said notch, said anti-spin clip further having a lock tab depending from the leg on said backside of said oil seal and projecting radially past the unsealed other radially facing side of said oil seal, and a lock groove in the unsealed wall of said oil seal groove in said rotor aligned with the normal direction of oil seal movement for receiving said lock tab to prevent said oil seal from spinning in said oil seal groove while permitting said anti-spin clip to move with said oil seal in the normal direction in said oil seal groove so that said oil seal remains free to move axially to maintain sealing engagement with the opposite housing side wall.

3,853,441

ROTATABLE ABUTMENT VALVE ROTARY PISTON DEVICE

Cyrus E. Small, Jr., 541 7th Ave., Laurel, Miss. 39440

Filed Apr. 2, 1973, Ser. No. 347,157
Int. Cl. F04c 17/00
U.S. Cl. 418—226 12 Claims

1. A rotary piston device comprising:

a. A casing;

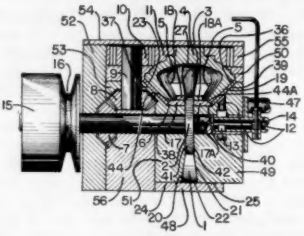
b. means defining an annular chamber within said casing wherein said annular chamber has a pair of spaced open-

ings, which are formed by the intersection of an abutment valve guide cavity with the entire cross sectional area of said annular chamber, facing each other, said pair of openings being the ends of said annular chamber;

c. means defining an abutment valve guide cavity within said casing wherein said pair of spaced openings are positioned on opposite sides of said abutment valve guide cavity, said openings communicating with said abutment valve guide cavity and said cavity having a plurality of spaced abutment valve mating inner bottom surfaces which are outward facing convex spherical in shape with the centers of said convex spherical surfaces being common with the axial center of said annular chamber;

d. a rotatable shaft mounted in said casing, axially aligned with said annular chamber and having a flywheel affixed thereto;

e. a rotor fixedly attached to said shaft, the periphery of said rotor being convex spherical in shape wherein said periphery is concentrically aligned with the abutment valve mating inner bottom outward facing surfaces of said abutment valve guide cavity and wherein said rotor periphery forms the inner surface of said annular chamber;



f. a piston fixedly attached to said rotor having a configuration substantially the same as and sealingly fitted in said annular chamber and being aligned to rotate within said annular chamber;

g. an abutment valve having a plurality of concave spherical inner surfaces which slidably mate with the plurality of spaced abutment valve mating inner bottom surfaces of said abutment valve guide cavity is rotatably mounted in said casing between said spaced openings in said annular chamber and within said abutment valve guide cavity wherein the exterior of said abutment valve is shaped to fit into said abutment valve guide cavity to intermittently and simultaneously seal both of said spaced openings with each mean one half revolution of said abutment valve wherein said abutment valve has an aperture therethrough to permit passage of said piston through said abutment valve with each revolution of said piston;

h. means for timing the rotation of said abutment valve such that it revolves at mean one half the speed of said piston;

i. means for the intake of fluid to said annular chamber; and

j. means for, simultaneously with said fluid intake, exhausting fluid from said annular chamber.

3,853,442

APPARATUS FOR PREPARING SHEET MATERIAL

Peter John Stemp, Surrey, England, assignor to Redland Bricks Limited, Surrey, England

Filed Dec. 29, 1972, Ser. No. 319,642

Claims priority, application Great Britain, Jan. 3, 1972, 000159/72

Int. Cl. B29d *7/14*

U.S. Cl. 425—112 **14 Claims**

1. An apparatus for preparing a sheet material from a homogeneous mass of resin, fibrous and particulate material, which apparatus comprises, in combination,

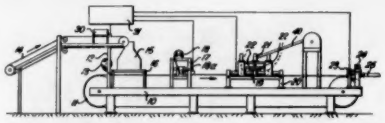
a. an endless conveyor belt having means to drive the conveyor belt past the following stations in succession;

b. a depositing station to supply the material evenly onto the conveyor belt;

c. a compression station comprising at least one nip roller to compact the material on the belt surface;

d. a compacting station comprising

i. a movable carriage which is reciprocable relative to the conveyor belt in a direction longitudinal to the movement of the conveyor belt;



ii. a support plate beneath the conveyor belt;

iii. a plurality of rollers mounted on the carriage for rotation about an axis transverse to the direction of movement of the belt; and

iv. pressure means to move the roller towards the support plate to compress the material as the carriage is reciprocated; and

e. a station from which compacted material is removed from the conveyor belt.

3,853,443

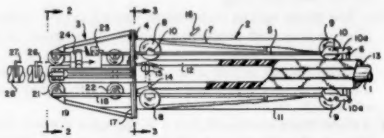
APPARATUS FOR THE EXTERNAL COATING OF A PIPELINE WITH FOAMED PLASTIC

William J. Grillos, Midland, Tex., assignor to Shell Oil Company, New York, N.Y.

Division of Ser. No. 604,256, Dec. 23, 1966, abandoned. This application Dec. 31, 1968, Ser. No. 803,511

Int. Cl. B29f *3/10*

U.S. Cl. 425—115 **1 Claim**



1. An apparatus for externally coating a pipeline with plastic comprising:

a travelling frame positioned around said pipeline and adapted to travel longitudinally therealong by means of pairs of wheels uniformly distributed circumferentially about said pipeline and rotatably mounted in said travelling frame and in rolling contact with said pipeline, each wheel of each pair of wheels being axially separated to center said travelling frame about said pipeline and to counteract tilting moments of an overhanging sleeve portion extending from said frame and spaced from said pipeline to thereby define a chamber around said pipeline, said sleeve portion including a series of longitudinally-extending endless belts peripherally disposed about and spaced from said pipeline to form a closed sleeve whereby the inner surface of said belts and the exterior of said pipeline define said chamber and further whereby said belts move to prevent sliding contact of said belts

with said plastic when said travelling frame is moved along said pipeline, the inner surface of said belts being supported by transversely curved supports so that said belts provide a chamber of substantially circular cross section, the length of said sleeve portion being sufficiently great so as to support and retain said plastic for a time sufficient for said plastic to acquire a substantially rigid foamed state while in said chamber;

fluid discharge means attached to said frame at the leading end of said sleeve to inject a foamable plastic into said chamber as said frame moves along said pipeline;

a flexible sealing ring carried by said sleeve portion and positioned between the inner surface of said sleeve portion and the exterior of said pipeline, said sealing element pressing elastically against said pipeline and including opening means to permit access for said fluid discharge means to said chamber;

prime mover means carried by the leading end of said travelling frame and operatively connected to said pipeline to move said frame along said pipeline, said prime mover means including at least one driven wheel in driving contact with said pipeline, at least one winch and one winch cable, and attaching means for fastening the free end of said winch cable to said pipeline.

3,853,444

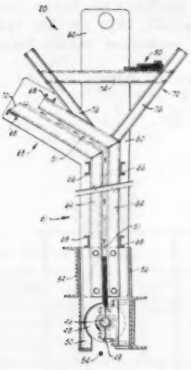
AUTOMATIC RE-BAR INSTALLER

Cordis W. Jones, Salina, Kans., assignor to Hastings Dynameld Corporation, Hastings, Nebr.

Continuation of Ser. No. 31,967, April 27, 1970, abandoned. This application Mar. 20, 1972, Ser. No. 236,209

Int. Cl. B28b *21/56*

U.S. Cl. 425—126 **4 Claims**



1. In a movable machine for the placing of concrete and form pouring thereof having a supporting structure movably mounted in operation and in communication with a concrete form having rails therebeside supporting said machine, in combination therein and therewith an automatic re-bar installer for placing reinforcement bars in the concrete comprising:

a. a frame means mounted on said machine transverse said supporting structure and communicate with said concrete forms,

b. a bar supply means mounted on said frame means and having a slotted means to hold a quantity of said bars, and having a vertical portion in alignment with a guide means and a disc member and an upper, outwardly inclined top section to receive and direct reinforcement bars therewith,

c. a bar holding and releasing means operably connected to said bar supply means and having said disc member rotatable and mounted on a shaft and having a notch in the periphery thereof to receive one of the bars from said slotted means, said disc member mounted between vertically disposed and spaced guide members of said guide means forming a slot in communicatin with the slot in said slotted means, one of said guide members having an arcuate edge portion adjacent said disc member to in combination with said disc member hold and guide a bar as said disc member rotates to deliver said bar, and the other of said guide members having a portion to in combination with said disc member and said notch therein upon rotation of said disc in the other direction prevent a bar from entering and remaining in said notch by forcing the bar from said notch against the bar guide, and

d. a powering means operably connected to said bar holding and releasing means and having rotatable a wheel member operably connectable with one of said rails and having a primary driving means operable with a secondary driving means to rotate said shaft and disc member at a predetermined certain rate relative to said wheel member, and said primary driving means including a second shaft, at least one first sprocket means and at least one second sprocket means with said first sprocket means connected to said wheel menber, and said second sprocket means connected to said second shaft, a chain member engaging said first and said second sprocket means in order that said first sprocket means can drive said second sprocket means, said second driving means including at least two sprockets, one of said two sprockets connected to said second shaft, and the second of said two sprockets connected to said first-named shaft, and a second chain member engaging said first and said second sprocket so that said first sprocket can drive said second sprocket,

said re-bar installer in operation depositing re-bars into said forms from said bar supply means as same are released therefrom by said bar holding and releasing means upon the movement of said machine along said form on said rails.

3,853,445

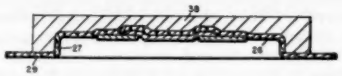
APPARATUS FOR MAKING A MOLD FOR REPRODUCING PARTS OF SHOES AND THE LIKE

Frederick A. Prahl, Jr., Carlisle, and Robert B. Dunlap, Medway, both of Mass., assignors to Compo Industries, Inc., Waltham, Mass.

Division of Ser. No. 173,072, Aug. 19, 1971, Pat. No. 3,751,540. This application Apr. 4, 1973, Ser. No. 347,850

Int. Cl. B29c *1/02*

U.S. Cl. 425—175 **4 Claims**

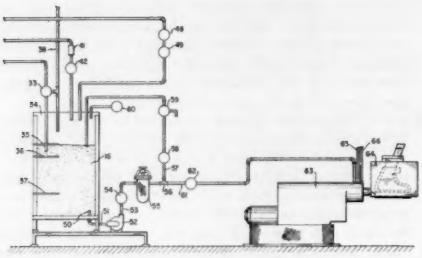


1. An intermediate mold for molding making a portion of a master mold which, in turn, is used to reproduce from a master pattern a part comprised of thermoplastic material simulating the master pattern, comprising a flexible sheet which is of impervious material and set in a layer of quick-setting material which forms a rigid backing for the flexible sheet, said impervious material and quick-setting material being united to provide a rigid mat into which also is embeded the master pattern to a depth such that the portion of the master pattern projecting from the mat corresponds substantially to the thickness of the thermoplastic sheet material to be molded and a surrounding wall defining a cavity corresponding in depth from the surface of the master pattern to the thickness of the bottom of the mold to be made therefrom.

3,853,446
LIQUID INJECTION MOLDING APPARATUS

Fritz Hostettler, Freehold, and Peter U. Graefe, Bricktown, both of N.J., assignors to Inter Polymer Research Corporation, Farmingdale, N.J.

Filed Apr. 17, 1973, Ser. No. 352,076
Int. Cl. B29c *29/00*; **B29f** *1/00*
U.S. Cl. 425—217 **6 Claims**



1. An apparatus for the liquid injection molding of multi-component thermosetting reaction mixtures having holding tanks for storing each component of the reaction mixture under vacuum, recirculating and metering pumps for recirculating each component to its respective holding vessel between injection cycles and alternately delivering metered amounts of each component to a mixing and injecting unit during the injection cycle and a mold having an internal configuration or cavity conforming to the surfaces of the article to be molded, a movable bottom plate and an injection port and short injection channel terminating in a gate positioned within the mold cavity at a point relatively remote from the geometric center or point of balance of the bottom plate from molding the reacting mixture to the desired configuration, wherein the improvement comprises:

a. means for continuously recirculating one part of each reaction component to its respective holding tank while simultaneously delivering the other part of the reaction component to a metering, mixing and injecting unit for injecting a predetermined amount of homogeneous reaction mixture into the injection port of a mold under substantially constant pressure only for the duration of the injection cycle;

b. means for permitting discharge of the reaction mixture from the metering, mixing, and injecting unit into the injection port of the mold only for the duration of the injection cycle;

c. means for maintaining substantially constant pressure for that part of the reaction component being recirculated to its respective holding tank regardless of the state of operation of means (b); and

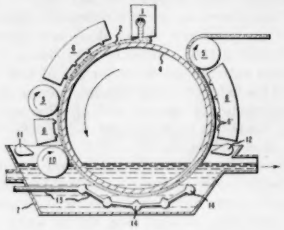
d. means for intercepting and deflecting the flow path of the reaction mixture injected into the mold, said means being positioned upon the upper surface of the bottom plate a short distance from the gate.

3,853,447
APPARATUS FOR QUENCHING POLYMER FILMS

Neil Ira Steinberg, Somerset, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 88,911, Nov. 12, 1970, abandoned. This application Mar. 2, 1973, Ser. No. 337,684
Int. Cl. B29c *13/04*
U.S. Cl. 425—223 **6 Claims**

1. In an apparatus for quenching a film of liquefied organic polymer to form a solid film of the type comprising: a movable casting surface; means for casting a film of molten polymer onto said casting surface; a trough for a liquid coolant into which the lower segment of said casting surface and the film attached to it is immersed; and means for removing the film from said casting surface; the improvement wherein said apparatus further comprises a chilling roll adjacent to said casting surface, disposed relative to said trough so that it is immersed

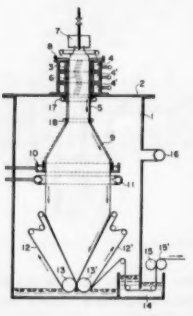


in the cooling liquid to a depth not exceeding its radius, means adjacent to said chilling roll to dry the the surface of said chilling roll before it contacts the film, said chilling roll being further adapted to press the film against said casting surface, at a point just prior to the point where the film enters the liquid coolant, to momentarily harden the exposed surface of the film and form a hardened skin which will resist deformation due to the quenching process.

3,853,448
APPARATUS FOR SHAPING AN ORIENTED TUBULAR FILM BY WET PROCESS

Masahide Yazawa, Higashi, Japan, assignor to Polymer Processing Research Institute Ltd., Tokyo, Japan

Filed Aug. 22, 1972, Ser. No. 282,798
Claims priority, application Japan, Sept. 23, 1971, 46-74426
Int. Cl. B29d *7/20, 7/24*
U.S. Cl. 425—326 R **8 Claims**



1. An apparatus for shaping an oriented tubular film by downwards blowing wet process, which comprises: a hollow cylinder having an annular feed vessel for coagulation liquid at the top thereof, provided sufficiently below and concentrically to an annular die from which a tubular polymer mass is extruded penetratingly and vertically through the top wall of a sufficiently spacious negative pressure chamber capable of accommodating therein hereinafter-mentioned successive means down to a flattening and withdrawing pinching means, the upper part of the hollow cylinder, projecting out from the negative pressure chamber, having heating means from outside thereof and grooved inner wall surface, and the lower part

of said hollow cylinder, extending into the negative pressure chamber, consisting of a perforated wall through which negative pressure outside the wall and in the negative pressure chamber can suck and press the film thereto, to support the film while passing therethrough; a downwardly spread, conical umbrella-like guide wall for the inflating tubular film, attached to the lower end of the perforated hollow cylinder; supply means for supplemental heated liquid to the perforated wall and the umbrella-like guide wall; an annular trough with drainage means to collect the flowing down liquid and separate the heating liquid from the inflated tubular film at the lower end of said guide wall; an annular coagulating liquid tube provided below the trough to inject a coagulation liquid to the tubular film; a flattening and withdrawing means of the tubular film provided at the bottom of the negative pressure chamber; and a negative pressure sealing means provided at the side bottom of the negative pressure chamber together with outside withdrawing means to withdraw the flattened tubular film into the atmosphere.

3,853,449

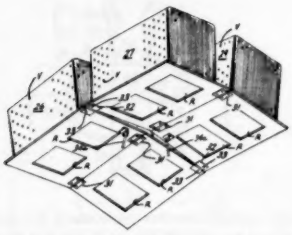
APPARATUS FOR FORMING ARTICLES FROM PLASTIC SHEET MATERIAL

Norman F. Houghton, Connersville, Ind., assignor to Philco-Ford Corporation, Blue Bell, Pa.

Division of Ser. No. 408,108, Oct. 19, 1973,. This application May 6, 1974, Ser. No. 466,956

Int. Cl. B29c *17/04*

U.S. Cl. 425—388 **6 Claims**



1. In apparatus for forming a deep drawn unitary plastic article comprising at least a pair of adjacent walled structures having unidirectionally presented openings, said apparatus being of the type including at least a pair of spaced, unidirectionally presented molds having outer surface portions corresponding to the shape of the article to be formed, an assist-plug structure including portions insertable into the spaces between said unidirectionally presented molds, means for supporting a heat-softened unitary sheet of thermoplastic material between said molds and said assist plug structure, means for effecting relative movement between said molds and said assist-plug structure to cause them to bear against said sheet, and means for producing a pressure differential across opposite surface portions of said sheet to cause it to conform to surfaces of said molds, the improvement comprising: means for pivotally mounting said molds for movements about a pair of transversely extending axes so that in one position thereof confronting mold wall sections are closely spaced, and in another position thereof said wall sections are further spaced; means for maintaining said molds in said other, further spaced position as said molds and said assist-plug are moved together against said sheet; and means for pivoting said molds to said one, closely spaced position prior to operation of said means for producing the recited pressure differential.

3,853,450

DEVICE FOR SHAPING A BELL END TO A TUBE

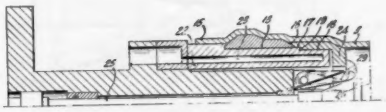
Petrus Marinus Acda, Enkhuizen, Netherlands, assignor to Pulra-Nederland N.V. Enkhuizen, Netherlands

Filed Dec. 21, 1970, Ser. No. 100,296

Claims priority, application Netherlands, Dec. 24, 1969, 6919424

Int. Cl. B29c *17/02*

U.S. Cl. 425—393 **9 Claims**



1. In a device for shaping a bell end on a tube of thermoplastic material, wherein the bell end has an inner surface with a larger diameter than its opening so that the inside of the tube tapers radially inwardly from the larger diameter inner surface toward the opening thereof, and wherein the shaping device has a cyclindrical mandrel with an outer profile shaped substantially the same as the shape to be formed on the tube, the mandrel having an outer surface that varies in diameter in a stepwise manner from the end thereof to be inserted in the tube, with the transitions between adjacent steps of the mandrel surface gradually merging with angles less than 45° with respect to the axis thereof, and wherein said end of the mandrel is tapered so that the end diameter is less than the inner diameter of the tube; the improvement wherein said mandrel is comprised of a central member of a material that is hard in comparison to said thermoplastic material, said central member having a largest diameter portion spaced from said end and having a diameter that is not substantially less than the outer diameter to be shaped, and an intermediate portion between said end and said largest diameter portion and having a lesser diameter, and a shaping ring slidable on said intermediate portion, said shaping ring having at least one outer surface with a diameter larger than that of said largest diameter portion of said central member, said shaping ring being of a material having a hardness between that of said thermoplastic material at ambient temperature and that of said thermoplastic material at the deforming temperature thereof, said shaping ring further having an inner diameter which is less than the largest diameter of said largest diameter portion, said shaping ring being axially removable without deformation over said end of said central member, whereby said shaping ring is removed from said tube only when the central member is axially displaced from said ring.

3,853,451

STRIPPER DEVICE FOR MOLDED ARTICLES

Marvin F. Bendzick, Pittsburgh, Pa., assignor to Cities Service Company, New York, N.Y.

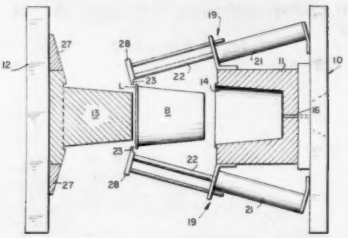
Filed Aug. 31, 1973, Ser. No. 393,353

Int. Cl. B29c *7/00*

U.S. Cl. 425—438 **6 Claims**

1. A device for stripping a piece-part from a die set comprising a first fixed die member, a second cooperating die member moveable relative to the first member along a predetermined path, said die set in the operative position defining a mold cavity including a lip configuration, means for introducing moldable material into the mold cavity to form an article matching said cavity including said lip, a piston and cylinder assembly mounted upon said fixed die and disposed externally

of the die set, said assembly having a center line disposed at an angle relative to said predetermined path and means for



moving the second die member and the piston in unison whereby the piston approaches the mold cavity in the region of said lip by virtue of the angular disposition of the assembly.

3,853,452

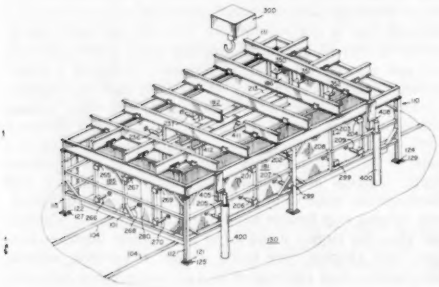
MOLDING MACHINE

Ernest J. Delmonte, 46 Harwood Ln., East Rochester, N.Y. 14445

Filed May 22, 1972, Ser. No. 255,386

Int. Cl. B28b *1/00*

U.S. Cl. 425—450 R **8 Claims**



1. A molding machine for molding a formable material on a precast floor into a room module having monolithic vertical intersecting walls joined perpendicularly to said floor and having corners at the intersection of said walls, said machine comprising:

a. a hoistable frame having a superstructure including panel supporting rail means,

b. interior wall forming panels movably suspended from said rail means of said superstructure,

i. said interior wall forming panels being movable normal to said floor into a wall molding position within said room module,

c. corner forming means including corner forming panels movably suspended from said rail means of said superstructure within said room module for movement normal to said floor into the intersections of said interior wall panels to define the interior corners of said room module when disposed in a molding position,

d. exterior wall forming panels movably suspended from said rail means of said superstructure,

i. said exterior panels being movable normal to said floor and disposed in spaced cooperative relationship to said interior wall forming panels and said corner panels when disposed in a molding position to derive a wall cavity of a predetermined width for receiving said formable material therebetween to mold said monolithic walls,

e. signal responsive interlocking means connected to said frame for sequentially controlling said movement of said corner forming panels, said interior wall forming panels and said exterior forming panels, in a predetermined order into and out of said molding position,

i. said signal responsive interlocking means includes interlocking means connected to said frame for interlocking said corner panels, said interior panels and said exterior panels in said molding position independently of said rail means, and

f. hoisting means for raising and lowering said frame relative to said floor only when said interior panels, exterior panels and corner panels are disposed out of said molding position.

3,853,453

LOBATE COMBUSTION CHAMBER

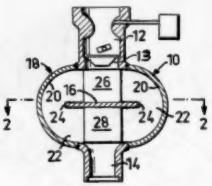
Karl Borje Olsson, S-270 57, Kivik, Sweden

Filed Apr. 2, 1973, Ser. No. 346,790

Claims priority, application Sweden, Apr. 4, 1972, 4294/72

Int. Cl. F23c *3/02*

U.S. Cl. 431—1 **4 Claims**



1. A combustion chamber particularly for pulsating combustion of fuel air mixture having at one end an inlet for fuel mixture and at an opposite end an outlet for exhaust gases, wherein the cross section of the chamber between the inlet and the outlet has a configuration which deviates from the cross section of the inlet, the chamber having a number of side chambers, wherein a transverse shield partitions the combustion chamber into first and second compartments so that a fuel mixture flowing through the inlet into the first compartment will be caused to flow around the shield through its side chambers into the second compartment and thereupon to the outlet.

3,853,454

METHOD AND APPARATUS FOR COMBUSTING FLAMMABLE LIQUID WASTES

Vladimir Ivanovich Filippov, ulitsa 8 Marta, 2/10, kv. 93, Moscow, and Mikhail Vasilievich Sumarokov, ulitsa 116, korpus 26, kv. 38, Ljubertsy Moskovskoi oblasti, both of U.S.S.R.

Filed Dec. 29, 1972, Ser. No. 319,382

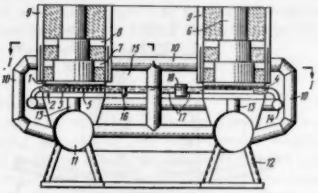
Claims priority, application U.S.S.R., Mar. 3, 1974, 1754724

Int. Cl. F23d *5/02*

U.S. Cl. 431—7 **5 Claims**

1. A method of combusting flammable liquid wastes, comprising setting a layer of flammable liquid wastes into rotation

in a circular space by way of a directional and dispersed air flow through this layer, while the gasification products of the flammable liquid wastes arise and are set into rotation in a



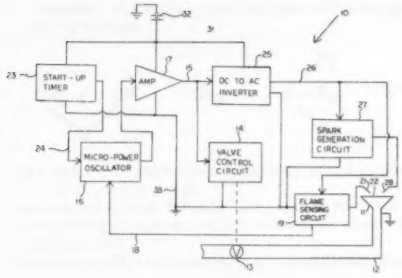
combustion chamber by supplying air thereto on, at least one plane perpendicular to the vertical axis of the combustion chamber, and along the entire perimeter of the chamber.

3,853,455

BURNER CONTROL APPARATUS

William J. Riordan, Shrewsbury, and George B. Foster, Hyde Park, both of Mass., assignors to Walter Kidde Company, Inc., Clifton, N.J.

Filed Sept. 24, 1973, Ser. No. 399,853
Int. Cl. F23n *5/12*
U.S. Cl. 431—80 **17 Claims**



1. Burner control circuit apparatus comprising:
valve means for controlling the flow of fuel to a burner;
flame sensor means for providing a source of power in response to the presence of flame at the burner;
oscillator means connected to receive power from said flame sensor means and to produce an oscillating signal in response thereto; and
valve control means for opening said valve in response to said oscillating signal.

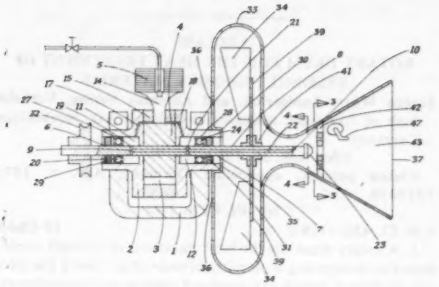
3,853,456

FUEL BURNING APPARATUS

Paul A. Mutchler, University City, Mo., assignor to American Air Filter Company, Inc., Louisville, Ky.

Filed May 29, 1973, Ser. No. 364,353
Int. Cl. F23d *11/04*
U.S. Cl. 431—168 **8 Claims**

1. A fuel burning apparatus comprising: a housing having inlet means and spaced outlet means and an opening for receiving a shaft end rotatively mounted within said housing, said shaft having a fluid passageway disposed therein, said fluid passageway having at least one inlet and an outlet; a rotor drivably connected to said shaft, said rotor having an inlet in communicative relation with a fluid adding means and an outlet in communicative relation with said fluid passageway inlet; said fluid adding means being disposed to provide a mixture of fluid fuel and primary combustion air to said rotor; air moving means drivably connected to said shaft, the low pressure side of said air moving means being in spaced relation



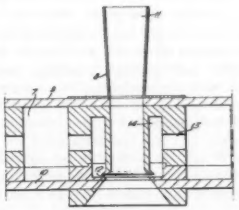
from and in communication with said inlet means of said housing whereby secondary combustion air is brought into the housing through said inlet means; a nozzle on said shaft end adapted to communicate with said fluid passageway outlet whereby fluid discharging from said nozzle is mixed with said secondary combustion air being moved through said housing, said housing outlet being spaced from said nozzle and in alignment therewith to provide a combustion chamber disposed therebetween; ignition means disposed within said combustion chamber for igniting said fluid discharging from said nozzle; and, driving means for said shaft.

3,853,457

FLARE

Denis Henry Desty, Weybridge, and Christopher John Young, Horton, both of England, assignors to The British Petroleum Company Limited, London, England

Filed May 25, 1973, Ser. No. 363,857
Claims priority, application Great Britain, June 1, 1972, 25701/72
Int. Cl. F23d *13/12*
U.S. Cl. 431—328 **4 Claims**



1. A burner element, comprising: a fuel chamber through which pass a plurality of first tubes, the shape of said first tubes being cylindrical and being arranged with their axes parallel to one another; means for reducing gas velocity comprising second tubes of increasing cross-sectional area attached to the exit of each of said plurality of first tubes; said

second tubes of increasing cross-sectional area each comprising a diffuser cone having a throat diameter of 1 inch to 3 inches and a length of 6 inches to 18 inches; the interior of said fuel chamber being connected to the bores of each of said plurality of first tubes only by means of Coanda nozzles so that, in use, fuel passes from said fuel chamber into said first tubes via the Coanda nozzles thus entraining surrounding air into the fuel flow, said fuel and air thereafter passing through each of said first tube exits and said second tubes of increasing cross-sectional area to a combustion zone to thereby produce a single, self-stabilizing, horizontal flame.

3,853,458

ROTARY DRUM FOR THE HEAT TREATMENT OF STRONGLY EROSIVE MATERIAL

Jurgen Wurr, Ennigerloh, and Antonius Vering, Vorhelm, both of Germany, assignors to Polysius AG, Neubeckum, Germany

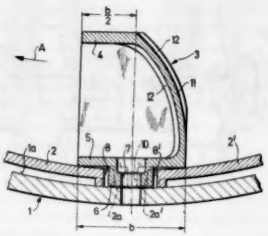
Filed Nov. 26, 1973, Ser. No. 418,887

Claims priority, application Germany, Apr. 9, 1973, 7313428

Int. Cl. F27b 7/14

U.S. Cl. 432—118 **10 Claims**

1. A rotary drum for the heat treatment of strongly erosive material, comprising a plurality of wear plates lining the internal drum wall, which are arranged around the circumference of the drum, and a plurality of lifting blades each of which is replaceably secured to the internal drum wall between the opposing ends of two adjacent wear plates, and each of which has a foot that extends above both adjacent wear plates to



retain the wear plates in position and is provided with a rib that extends parallel to the drum axis and abuts against the internal drum wall between the adjacent wear plates, to prevent fine material from flowing backward under the lifting blade.

3,853,459

PROCESS FOR DYEING CROSSLINKED CELLULOSIC FABRICS WITH DISPERSE DYESTUFFS

Robert J. Harper, Jr., Metairie; Eugene J. Blanchard, New Orleans; John T. Lofton, and Gloria A. Gautreaux, both of Metairie, all of La., assignors to The United States of America as represented by the United States Department of Agriculture, Washington, D.C.

Filed Nov. 5, 1971, Ser. No. 196,211

Int. Cl. D06p *1/76*

U.S. Cl. 8—18 **7 Claims**

1. A process for applying a disperse dyestuff to a cellulose fabric having poor affinity for said dyestuff, which process consists of installing a polymer selected from the group consisting of polymerized methyl acrylate and polymerized acrylamide on the fiber surfaces of the cellulose fabric, said polymer being installed via graft polymerization employing the counterpart monomer, and subsequently dyeing the cellulose with a disperse dyestuff.

3,853,460

CONCENTRATED AND STABLE SALT COMPOSITIONS OF EPOXYPROPYLAMMONIUM SALTS

Jean Balland, Chateau-Renault, France, assignor to Manufacture De Produits Chemiques Protex, Paris, France

Filed Jan. 26, 1973, Ser. No. 326,586

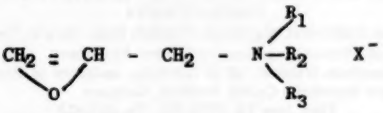
Claims priority, application France, Jan. 26, 1972, 72.03385

Int. Cl. C09b *6/70*; **D06p** *1/68*

U.S. Cl. 8—84 **5 Claims**

1. A stable paste consisting essentially of

a stabilized salt of epoxypropyltrialkyl ammonium compound which is less sensitive to the action of atmospheric humidity, which salt crystallizes pure and corresponding to the formula



in which R_1, R_2 and R_3 are each an alkyl of 1–3 carbons, and X is an anionic group,

an organic solvent for said salt selected from the group consisting of aprotic organic solvents or alkyl ethers of glycols, and

an alkaline alkyl sulfosuccinate or alkylsulfosuccinamate.

3,853,461

ETHERIFICATION OF COMPOUNDS BEARING ALCOHOLIC HYDROXYL GROUPS

Herbert Willersinn; Hermann Gausepohl; Herbert Naarmann, and Karl-Ruediger Hellwig, all of Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

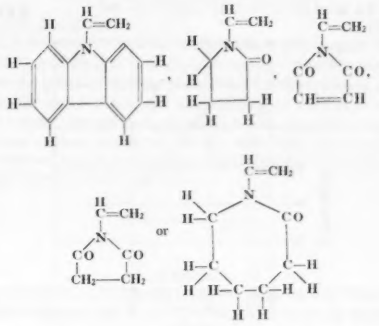
Filed Dec. 8, 1971, Ser. No. 206,171

Claims priority, application Germany, Dec. 10, 1970, 2060805; Mar. 23, 1971, 2114079

Int. Cl. D06m *13/36*, *13/38*

U.S. Cl. 8—189 **6 Claims**

1. A process for the etherification of compounds bearing alcoholic hydroxyl groups selected from the group consisting of monohydric, aliphatic saturated or unsaturated alcohols of from 1 to 8 carbon atoms in which the hydroxyl group is attached to one of the aliphatic carbon atoms; polyhydric alcohols of from 2 to 12 carbon atoms, cellulose, starch, polyvinyl alcohol, polyesters containing alcoholic hydroxyl groups, proteins containing free hydroxyl groups, terpene alcohols and steroids by causing ethylenically unsaturated compounds to act on the compounds bearing alcoholic hydroxyl groups under the action of high energy radiation, wherein the compounds bearing alcoholic hydroxyl groups are reacted with tertiary amines of the following formulae



said reaction being carried out in the presence of organic halogen compounds containing one or more halogen atoms attached to aliphatic carbon atoms, said reaction being carried out for from 1/10 second to 1 hour whereby said compounds bearing alcoholic hydroxyl groups are etherified.

3,853,462

COMPACTION OF POLYESTER FABRIC MATERIALS

Ray E. Smith, Homewood, Ala., assignor to Meadox Medicals, Inc., Oakland, N.J.

Filed Feb. 23, 1972, Ser. No. 228,722

Int. Cl. D06m *5/04*; **A61g** *1/24*

U.S. Cl. 8—130.1 **20 Claims**

1. A process for preparing a synthetic vascular prosthesis comprising the steps of:

a. providing a knitted synthetic linear polyester fabric tubing material having a uniform porosity, measured on the Wesolowski scale, above about 7,500 up to about 20,000 and in excess of that suitable for long-term healing effects without undue hemorrhaging at implantation;

b. immersing said porous knitted synthetic linear polyester fabric tubing material in a compacting solution consisting essentially of from about 2 to about 10 percent by weight of an acidic organic component selected from the group consisting of hexafluoroisopropanol, phenol, meta-cresol, hexafluoroacetone propylene adduct, trichloroacetic acid, parachlorophenol and hexafluoroacetone sesquihydrate and about 98 to about 90 percent by weight of a halogenated aliphatic hydrocarbon selected from the group consisting of methylene chloride, chloroform, tetrachloroethane and ethylene dichloride until said fabric material uniformly shrinks at least about 30 percent measured in the wale direction and the porosity of the said fabric material is, measured on the Wesolowski scale, from about 30 to about 5,000 and suitable for long-term healing effects without undue hemorrhaging at implantation;

c. removing said compacted fabric material from said compacting solution;

d. washing said compacted fabric material to remove all traces of said compacting solution; and

e. forming said compacted fabric material into a vascular prosthesis.

3,853,463

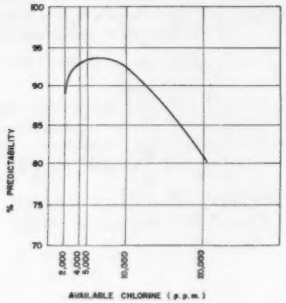
BLEACHABILITY TEST FOR COLORED FABRICS

Peter K. Woodward, San Rafael, Calif., assignor to The Clorox Company, Oakland, Calif.

Filed June 26, 1972, Ser. No. 266,049

Int. Cl. D06l *3/06, 3/16;* G01n *33/36*

U.S. Cl. 8—137 6 Claims



1. In a method of washing colored fabrics by subjecting them to oxidation conditions in an aqueous wash solution including detergent and bleach, the wash solution having an available chlorine concentration of up to approximately 200 ppm and a temperature of up to approximately 150°F, the steps comprising:

preparing a test solution having an available chlorine concentration of above 4000 and below 10,000 ppm

treating a small area of the fabric with the test solution, by saturating the small area of the fabric with the test solution, then drying the fabric,

comparing the treated fabric when substantially dry with similar untreated fabric for color differences, and excluding only those fabrics exhibiting said color difference from said wash solution and subjecting the remaining fabrics to said wash solution in a subsequent washing step.

3,853,464

HUMAN HAIR DYEING COMPOSITIONS CONTAINING DIPHENYLAMINES

Gregoire Kalopissis, Paris; Andree Bugaut, Boulogne-sur-Seine, and Francoise Estradier, Paris, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

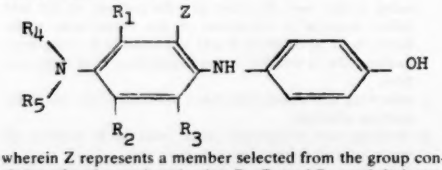
Continuation-in-part of Ser. No. 61,833, Aug. 6, 1970, Pat. No. 3,792,090. This application July 11, 1972, Ser. No. 270,633

Claims priority, application Luxembourg, Aug. 11, 1969, 59265

Int. Cl. D06p *1/32*

U.S. Cl. 8—11 15 Claims

1. A dye composition for human hair, comprising a solution in a solvent selected from the group consisting of waterand an aqueous lower alkanol solution of 0.002 to 2% by weight of a member selected from the group consisting of (a) a diphenylamine of the formula



wherein Z represents a member selected from the group consisting of amino and acylamino R_1, R_2 and R_3, each independently represent a member selected from the group consisting of hydrogen and lower alkyl containing 1–4 carbon ataoms; R_4 represents a member selected from the group consisting of hydrogen, lower alkayl containing 1–4 carbon atoms and together with R_1 and the nitrogen atom to which R_4 is attached form a heterocycle selected from the group consisting ofdihydro-oxazine and pyrroline; and R_5 represents a member selected from the group consisting of hydrogen, lower alkyl containing 1–4 carbon atoms and together with R_2 and the nitrogen atom to which R_5 is attached from a heterocycle selected from the group consisting of dihydro-oxazine and pyrroline; and (b) an acid salt of said diphenylamine.

3,853,465

TURBIDITY REDUCTION IN SERUM AND PLASMA SAMPLES USING POLYOXYETHYLATED LAURIC ACID COMPOUNDS

Robert L. Rush, Spring Valley, and Daniel L. Vlastelica, Pomona, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed June 9, 1972, Ser. No. 261,499

Int. Cl. G01n *33/16;* B01f *17/00;* C09k *3/00*

U.S. Cl. 23—230 B 9 Claims

1. A method of reducing turbidity in a serum or plasma sample for analysis which comprises admixing said sample with a polyoxyethylated lauric acid compound having the formula:

$$CH_3(CH_2)_{10}-\underset{\underset{O}{\|}}{C}-O-(CH_2-CH_2-O)_nH$$

wherein *n* is an integer from 9 to 20 until it becomes optically clear.

3,853,466

DIAGNOSTIC COMPOSITION FOR THE DETECTION OF UROBILINOGENS

Walter Rittersdorf, Mannheim-Waldhof; Dieter Berger, Viernheim; Hans-Georg Rey, and Peter Rieckmann, both of Mannheim-Waldhof, all of Germany, assignors to Boehringer Mannheim GmbH, Postfach, Germany

Filed June 14, 1972, Ser. No. 262,923

Claims priority, application Germany, June 19, 1971, 2130559

Int. Cl. G01n *21/06, 31/22, 33/16*

U.S. Cl. 23—230 B 34 Claims

1. Diagnostic agent for the detection of urobilinogen in body fluids which agent comprises an acid and at least one stable benzene diazonium salt wherein the phenyl radical contains at least one polyatomic electron donor group substituent with at least one mesomeric electron pair, in the o- or p-position and wherein the phenyl ring may contain additional substituents, the sum of the Hammett sigma values for all the substituents not exceeding the value of +0.4.

3,853,467

METHOD AND APPARATUS FOR IMMUNOLOGICAL DETECTION OF BIOLOGICAL PARTICLES

Ivar Giaever, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 15, 1973, Ser. No. 388,406

Int. Cl. G01n *21/04, 31/06, 33/16*

U.S. Cl. 23—230 B 18 Claims

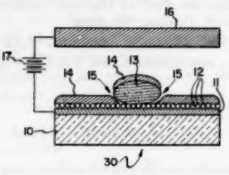
8. A method for detecting biological particles of a particular species in a fluid comprising the steps of:

inmersing a substrate having a metal surface into a solution of antibodies to said species of biological particle to adhere a layer of said antibodies thereon;

immersing said substrate having said antibodies thereon into said fluid whereby a plurality of said biological particles, if present in said fluid, immunologically bond to said antibodies;

applying a second metal layer over said layer of antibodies

and any of said biological particles;
immersing said substrate in an etchant solution; and



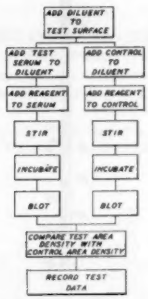
examining said substrate to determine whether any of said biological particles had bonded to said substrate.

3,853,468

METHOD AND APPARATUS FOR CLINICAL TESTING OF BIOLOGICAL FLUIDS

Herman Ralph Haymond, 1931 San Pasqual St., Pasadena, Calif. 91107

Filed May 8, 1972, Ser. No. 251,015
Int. Cl. G01n *33/16*
U.S. Cl. 23—230 B **8 Claims**



1. A process for clinical testing of biological fluids by means of a buffered reagent tending to agglutinate with biological fluid components under certain known conditions and including the steps of adding a sample of the fluid to be tested to a test surface having an affinity for nonagglutinated particles, adding a sample of control fluid of known content to another area of the test surface, adding a reagent to each of the test and control fluids on the test surface, stirring each of the resulting mixtures, leaving the mixtures undisturbed for a reactant period, applying an absorbent second surface to the areas on the test surface, and removing the second surface in order to compare the test and control areas on one of the surfaces.

3,853,469

REAGENT AND METHOD FOR PHOSPHORUS DETERMINATION

Leo G. Morin, and Jerome R. Prox, both of Miami, Fla., assignors to Medico Electronic, Inc., Indianapolis, Ind.

Filed Aug. 30, 1972, Ser. No. 284,885
Int. Cl. G01n *31/22, 33/16*
U.S. Cl. 23—230 B **30 Claims**

1. A reagent for determining inorganic phosphate in biological fluid which comprises an aqueous solution containing 0.5 to 30 percent of an acid, 0.1 to 2 gram percent of a molybdate salt, and o-phenylenediamine or a salt thereof.

3,853,470

REAGENT AND METHOD FOR GLUCOSE DETERMINATION

Leo G. Morin, and Jerome R. Prox, both of Miami, Fla., assignors to Medico Electronic, Inc., Indianapolis, Ind.

Filed Aug. 30, 1972, Ser. No. 284,888
Int. Cl. G01n *31/22, 33/16*
U.S. Cl. 23—230 B **18 Claims**

1. A reagent for glucose determination in biological fluids consisting of glucose oxidase, peroxidase, a member selected from the group consisting of a sulfonated phenylamine redox indicator and a sulfonated benzidine redox indicator, water and a buffer, the pH being between 4 and 5.9 and the ratio of glucose oxidase based on the EU units thereof present, to peroxidase, based on the purpurogallin units thereof present, being between 250:3 and 50:1.

3,853,471

DIAGNOSTIC COMPOSITION FOR THE DETECTION OF PEROXIDATIVELY ACTIVE SUBSTANCES IN BODY FLUIDS

Walter Rittersdorf; Hans-Georg Rey, and Peter Rieckmann, all of Mannheim-Waldhof, Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed July 3, 1973, Ser. No. 376,249
Claims priority, application Germany, July 18, 1972, 2235127
Int. Cl. G01n *31/22, 33/16*; **B01j** *1/16*
U.S. Cl. 23—230 B **23 Claims**

1. Test strip for the detection of peroxidatively active substances in body fluids, comprising a carrier containing a hydroperoxide, at least one chromogen and, as a stabilizer, at least one phosphoric or phosphonic acid amide of the formula

wherein

R_1 is dimethylamino, alkoxy, aryloxy, alkyl, aryl or N-morpholino and contains not more than 10 carbon atoms; R_2 and R_3 are individually selected from dimethylamino and N-morpholino.

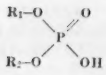
3,853,472

DIAGNOSTIC TEST STRIP FOR THE DETECTION OF COMPONENTS OF BODY FLUIDS

Walter Rittersdorf; Hans-George Rey, both of Mannheim-Waldhof; Werner Guthlein, Mannheim-Neckarau, and Peter Rieckmann, Mannheim-Waldhof, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed July 3, 1973, Ser. No. 376,248
Claims priority, application Germany, July 18, 1972, 2235152
Int. Cl. G01n *31/22, 33/16*; **C07d** *33/00*
U.S. Cl. 23—230 B **29 Claims**

1. Test strip for the detection of peroxidatively-active substances in body fluids, comprising a carrier containing a hydroperoxide, at least one chromogen and, as an activator, a compound of the formula



(I)

wherein

R_1 is hydrogen or methyl; and

benzene and/or pyridine rings are fused on at least one of the positions indicated with *c*, (*d*,*e*), *f* and *g*, provided that two adjacent rings must not simultaneously contain a cyclic nitrogen atom, and

wherein

said compound can be substituted, other than in the positions indicated by H and R_1, by lower alkyl radicals, which radicals together can also form a hydroaromatic ring.

3,853,473

REAGENT AND METHOD FOR UREA DETERMINATION

Leo G. Morin, and Jerome R. Prox, both of Miami, Fla., assignors to Medico Electronic, Inc., Indianapolis, Ind.

Filed Aug. 30, 1972, Ser. No. 284,887

Int. Cl. G01n *31/22*, *33/16*

U.S. Cl. 23—230 B **18 Claims**

1. A reagent for the determination of urea in biological fluids comprised of an acidified solution of *p*-dimethylaminobenzaldehyde in a dipolar aprotic solvent, said *p*-dimethylaminobenzaldehyde being present at a level between 0.1 to 10 gram percent, and the solution being acidified by an acidifying agent which is present in an amount between 1 to 30 percent.

3,853,474

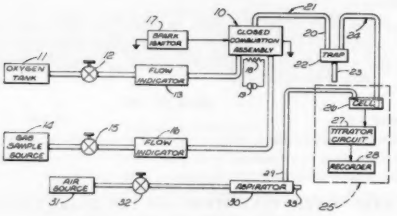
METHOD OF BURNING COMBUSTIBLE FLUIDS FOR FURTHER ANALYSIS

Robert R. Austin, Pasadena, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 10, 1972, Ser. No. 296,342

Int. Cl. G01n *27/42*, *25/00*

U.S. Cl. 23—232 E **1 Claim**



1. The method of monitoring the total elemental sulfur and combustible compounds thereof in a gas, said method comprising the steps of: supplying oxygen and the gas to the inlets of a combustion chamber at respective predetermined rates, said chamber having an outlet conduit sealed thereto, said chamber being everywhere sealed to prevent any air from entering thereinto; igniting the fluid in said chamber to form products of combustion; and analyzing said combustion products with a coulometric titrator, said oxygen being supplied at a rate between about 80 to 85 percent of the stoichiometric rate to oxidize the gas.

3,853,475

ELECTRICAL-EQUIPMENT CASINGS WITH CLAMP-ON DESALINATION UNIT

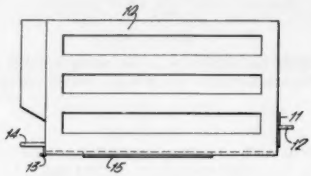
Alfred Kenneth Gordon, Churchdown, and Kenneth Eardley Willmott, Cheltenham, both of England, assignors to Smiths Industries Limited, London, England

Filed May 22, 1972, Ser. No. 255,329

Claims priority, application Great Britain, May 26, 1971, 17249/71

Int. Cl. B01j *1/08*

U.S. Cl. 23—252 R **3 Claims**



1. A case comprising a casing providing an elongate enclosure for containing electrical equipment, said casing being of rectangular cross-section to have four elongate external side-walls, one of said side-walls being apertured to facilitate air flow into the casing, an elongate ventilator unit for communicating air to the enclosure from the ambient atmosphere, said ventilator unit being of rectangular cross section to have four elongate external side-walls, and means clamping the ventilator unit and casing to one another with one of said side-walls of the ventilator unit in face-to-face relationship with said apertured side-wall of the casing, the said ventilator unit comprising inlet-duct means for ducting air from said ambient atmosphere, a body of desalinating material for receiving air from the inlet-duct means to remove salt therefrom, means retaining said body in said inlet-duct means, outlet-duct means for communicating desalinated air from the said body into the casing, said outlet-duct means including an aperture through said one side-wall of the ventilator unit to provide communication of air into said casing through the said apertured side-wall of the casing, and means coupled to said outlet-duct means for removing water from said air communicated into the casing, said means coupled to said outlet-duct means comprising means defining a cavity opening into said outlet-duct means, said cavity being spaced from said body of desalinating material, and a body of desiccant material retained in said cavity for absorbing moisture from the desalinated air.

3,853,476
DIAGNOSTIC AGENT FOR THE DETECTION OF BILIRUBIN

Walter Rittersdorf, Mannheim-Waldhof; Werner Guthlein, Mannheim-Neckarau; Dieter Berger, Viernheim; Hans-Georg Rey, and Peter Rieckmann, both of Mannheim-Waldhof, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

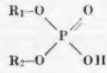
Filed July 24, 1973, Ser. No. 382,242

Claims priority, application Germany, Aug. 17, 1972, 2240357

Int. Cl. G01n *29/02, 31/02, 33/16*

U.S. Cl. 23—253 TP **33 Claims**

1. Test paper for the detection of bilirubin in body fluids, comprising an absorbent carrier and, impregnated thereinto a diazonium salt capable of coupling with bilirubin, an amount of an acid which is sufficient for the coupling reaction, and at least one phosphoric acid diester of the general formula:



wherein R_1 and R_2 are individually selected from unsubstituted or substituted aliphatic, cycloaliphatic, araliphatic or aromatic radicals, and contain not more than 18 carbon atoms each.

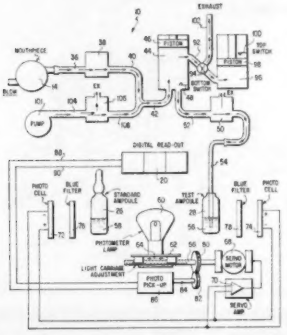
3,853,477
BREATH ANALYZER

Lawrence Allan Block, Point Pleasant; Robert N. De Wilde, Ocean Township, and Gavino A. Spampanato, Bricktown, all of N.J., assignors to Bangor Punta Operations, Inc., Greenwich, Conn.

Filed Dec. 27, 1972, Ser. No. 318,788

Int. Cl. G01n *21/24, 33/18*

U.S. Cl. 23—254 R **29 Claims**



1. A breath tester for quantitatively measuring the alcoholic content of the human breath comprising a sample chamber, an inlet tube for receiving a breath sample, a blow solenoid valve coupling said inlet tube to said sample chamber, an air pump, a pump solenoid valve coupling said pump to said sample chamber, an outlet tube connected to said sample chamber, a bubble solenoid valve coupled to said output tube for supplying gas from said sample chamber to a bubbler tube, means including a photodetector for sensing the amount of alcohol in a charge of gas from said bubble valve, a first switch coupled to said chamber for producing an electrical signal when said sample chamber is empty, a second switch coupled to said sample chamber for producing an electrical signal when said sample chamber is full, a clock for producing timing signals, a solid-state program counter having inputs coupled to said switches and said clock, and a solid-state program decoder coupling said program counter to said solenoid valves.

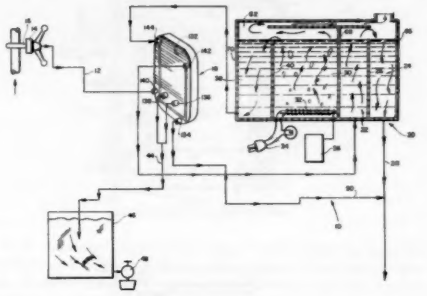
3,853,478
SOLUTE METERING APPARATUS

Franklin A. Rodgers, Brookline, Mass., assignor to Pactide Corporation, Dover, Del.

Filed Dec. 22, 1972, Ser. No. 317,653

Int. Cl. B01d *11/02, 13/00;* **B01f** *1/00*

U.S. Cl. 23—267 R **10 Claims**



1. Apparatus for feeding a solute into a solvent, including:

solvent holding means;

solute holding means;

means for communicating liquid between said holding means;

membrane means having microscopic through pores disposed in closing relation across said communicating means such that it may contact said solvent on one side and a solution of said solute on the opposite side; said membrane pores being filled with a liquid including said solvent for permitting said solvent and said solute solution to diffuse through said membrane; and

means for varying the area of said membrane means that may be brought in contact with at least one of said solute solution and solvent to vary the rate of diffusion of a solution of said solute through said membrane means; said area varying means includes frangible means for shielding a predetermined area of membrane surface from said solvent, whereby said frangible shielding means may be broken open to provide a predetermined change in the rate at which said solute solution may be fed to said solvent holding means, said frangible means for shielding including a plurality of nipple-like structures each having a sealed end communicating with said solvent and in communication with the solution of said solute via said membrane means, whereby said solvent and said solute solution may diffuse through said membrane means at a controlled rate as a function of the number of sealed nipple-like ends which are opened

3,853,479
BLOOD OXYGENATING DEVICE WITH HEAT EXCHANGER

Daniel A. Talonn, University City, Mo., and Denton A. Cooley, Houston, Tex., assignors to Sherwood Medical Industries, Inc., St. Louis, Mo.

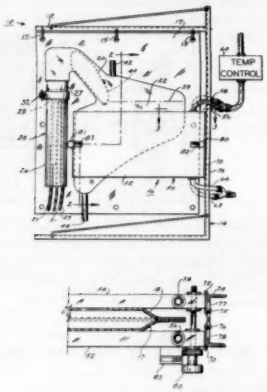
Filed June 23, 1972, Ser. No. 265,864

Int. Cl. A61m *1/03*

U.S. Cl. 23—258.5 **9 Claims**

1. In combination, a blood oxygenation device including an oxygenator chamber, means for introducing venous blood and oxygenation gas to said oxygenator chamber for producing gas bubbles in the blood to oxygenate the blood, a defoaming chamber connected to receive blood from said oxygenator

chamber and having anti-foam means therein for assisting in the removal of excess gas and vent means for venting excess gas to atmosphere, and a supple plastic blood settling reservoir chamber connected to receive blood from said defoaming chamber, said reservoir chamber having an outlet for discharging oxygenated blood, and blood temperature control means including a heat exchanger having a pair of relatively



movable plates disposed respectively on opposite sides of said reservoir chamber, adjustment means for adjustably effecting relative movement between said plates to clamp at least a portion of said reservoir chamber therebetween to selectively vary the volume of said reservoir chamber, and means for varying the temperature of at least one of said plates to control the temperature of the blood.

3,853,480

APPARATUS FOR THE CONVERSION OF PREPARED REFUSE SEWAGE SLUDGE MIXTURES INTO EARTH SUBSTANCE BY BIOLOGICAL DECOMPOSITION

Joseph Richard Kaelin, Villa Seeburg, Buochs, Switzerland

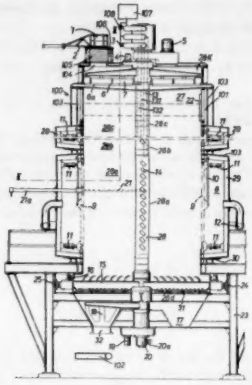
Filed Jan. 13, 1972, Ser. No. 217,581

Claims priority, application Switzerland, Jan. 21, 1971, 916/71

Int. Cl. C05f *9/02*

U.S. Cl. 23—259.1 **7 Claims**

1. An apparatus for the continuous conversion of prepared refuse-sewage sludge mixtures by biological decomposition, into earth substances, comprising, in combination, a substantially vertical container closed at all sides; means at the top of said container for automatically infeeding the material destined to be converted; means at the bottom of said container for automatically removing the material upon completion of the decomposition process; gas infeed means for an oxygen-containing gas required for the conversion process, said gas infeed means comprising a central tube extending along the central axis of said container and provided with gas discharge openings spaced therealong to discharge transversely of said container toward the sides thereof, and arranged in vertically spaced groups each extending vertically of, and vertically defining, a respective individual aeration zone within said container; said tube being mounted for rotation about its axis; and means for drawing off said oxygen-containing gas, said drawing off means comprising suction boxes arranged in spaced relation along the circumference and at the outside of said container in vertically spaced groups at different respective levels, with each group of suction boxes being aligned, transversely of said container, with a respective group of gas



discharge openings to further define the associated individual aeration zone; each suction box communicating with the interior of said container through a respective opening, in the container wall, covered by a respective grate.

3,853,481

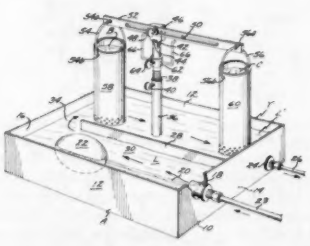
BALANCE BEAM FEEDER

William Bruce Murray, 12022 Montecito Dr., Los Alamitos, Calif. 90720

Filed Nov. 16, 1973, Ser. No. 416,384

Int. Cl. B01d *11/02*; **B01f** *5/10*

U.S. Cl. 23—267 A **8 Claims**



1. An apparatus for use in automatically dissolving first and second compounds in a first moving stream of a liquid in which they are soluble to provide a second moving stream of a solution in which said first and second compounds are dissolved in a weight ratio that is proportional to first and second weights of said first and second compounds, said apparatus including:

a. first means for defining a first moving stream of said liquid of substantially constant velocity; and

b. elongate balance beam means pivotally supported by a fulcrum means intermediate the ends thereof and having first and second ends that initially support first and second containers having perforate lower ends holding first and second weights of said first and second compounds respectively in said first stream in such relative vertical positions that said first stream contacts equal surfaces of said first and second compounds thereof, with said bal-

ance beam means moving the one of said containers holding the weight of said one compound that dissolves most rapidly upwardly to expose less of said surface thereof to said first stream and lowering the other of said containers that holds the weight of said other compound further into said first stream to expose more of said surface thereof to said first stream until said weight of said other compound has been so decreased by dissolving in said first stream that it is lighter than the weight of the said one compound in said upwardly moved container, whereupon the movement of said first and second containers is reversed, with the cycle of upward and downward movement of said first and second containers continuing and transforming said first stream into said second stream of solution.

3,853,482

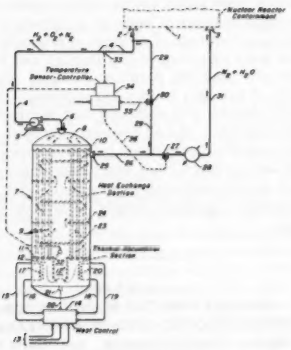
RECUPERATIVE THERMAL RECOMBINING SYSTEM FOR HANDLING LOSS OF COOLANT

Andrew Tej Bhan, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 216,714, Jan. 10, 1972, Pat. No. 3,791,924. This application Nov. 21, 1972, Ser. No. 308,354

Int. Cl. C01b *5/00*; **B01j** *1/14*

U.S. Cl. 23—284 **6 Claims**



1. A thermal system for recombining dissociated hydrogen and oxygen in a waste gas stream, which comprises in combination, a recombiner chamber having gas stream inlet means and a combined gaseous stream outlet means connective thereto, non-flame heating means connected to said chamber for heating gas stream supplied thereto, a recycle conduit means with control valve means therein connective between said gas stream inlet means and said combined gaseous stream outlet means, temperature sensing means connective with said recombiner chamber providing a temperature rise measurement therefrom, and controller means connecting to said temperature sensing means and to said control valve means in said recycle conduit means, with said controller means thereby operative to regulate and proportion the amount of recycle combined stream flow from the outlet means to the gas inlet means responsive to temperature as a measure of oxygen content in the hydrogen and oxygen containing gas inlet stream to the recombiner chamber.

3,853,483

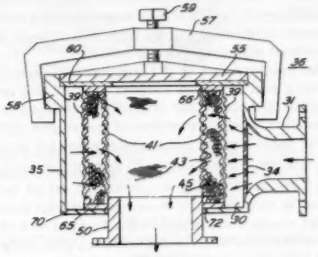
EXHAUST GAS CATALYTIC TREATMENT SYSTEM

Willis J. Cross, Jr., Media, Pa., assignor to Air Products and Chemicals, Inc., Wayne, Pa.

Filed Oct. 18, 1972, Ser. No. 298,582

Int. Cl. B01j *9/04*; **F01n** *3/14, 3/16*

U.S. Cl. 23—288 F **7 Claims**



1. A converter containing a bed of particulate catalyst for catalytic treatment of engine exhaust gases comprising a catalyst chamber having a substantially vertical sidewall and an opening to receive said catalyst; a removable cover plate mounted over the opening in said chamber; closure clamp clamped to said sidewall of said converter; means attached between said closure clamp and said cover plate for tightening said plate over said opening; and elongated, perforated annular cartridge mounted within said chamber having an inlet perforate wall, an outlet perforate wall and an opening at one end thereof in alignment with the opening in said chamber; a thermally destructible, porous sock containing said catalyst bed in the same geometric configuration as said annular cartridge so that said sock is insertable through the opening in said chamber and into the annulus of said cartridge; inlet means for placing a source of engine exhaust gases in fluid communication with said inlet perforate wall; treated gas outlet means from said chamber in fluid communication with said outlet perforate wall; and seal means removably disposed at the extremities of said cartridge with said sock positioned therebetween for preventing channeling of the exhaust gases at the extremities of said cartridge.

3,853,484

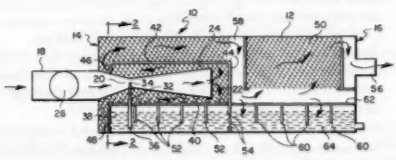
COMPACT MUFFLER SCRUBBER

Seymour Sudar, Malibu, and Frederick W. Poucher, Jr., Camarillo, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 22, 1973, Ser. No. 325,974

Int. Cl. F01n *3/16*; **B01j** *9/04*

U.S. Cl. 23—288 F **8 Claims**



1. A compact muffler for treating the exhaust gas of an internal combustion engine to remove impurities therefrom comprising:

an enclosed unitary housing adapted for connection in the exhaust system of the engine, said housing including shallow reactant and demister compartments serially connected in a horizontal arrangement,

a sump region in the bottom of said housing containing a body of an absorbent material which is solid at room temperature and which forms a molten pool for absorbing and reacting with said impurities upon increasing the temperature of said body above its melting point, heating means to maintain said absorbent material in the form of a molten pool, said heating means including means for the transfer of thermal energy from the exhaust gas to said absorbent material,

an inlet line disposed in the reactant compartment of said housing and including an inlet port of one end thereof adapted to receive the impurity-containing exhaust gas from an exhaust gas manifold of said engine and including outlet means at the other end thereof for directing said exhaust gas within said reactant compartment,

venturi means including a constricted throat portion disposed in said inlet line between said inlet port and said outlet means and located in the forward end of the reactant compartment so as to establish a pressure gradient in said inlet line during operation thereby promoting the return of absorbent material to the forward end of said reactant compartment,

means for aspirating the molten absorbent material into said exhaust gas including a line having one end disposed in said molten pool and the other end disposed in said constricted throat portion and including spray means for producing a dispersion of liquid droplets in said throat portion to provide exhaust gas-molten material contact area,

bypass conduit means communicating with said inlet line prior to said venturi means for conducting exhaust gas from said engine to bypass said venturi means and to regulate the pressure thereacross and to conduct the bypassed portion of said exhaust gas to another region of said reactant compartment to intermix with the exhaust gas exiting from said venturi means,

said bypass conduit means including valve means at least responsive to the pressure of the exhaust gas stream entering said venturi means,

contacting means including a packing disposed in said reactant compartment, said packing being in horizontal axial alignment with and circumferentially surrounding said outlet means of said inlet line whereby the exhaust gas upon leaving said outlet means impinges on said packing providing for further exhaust gas-molten material contact area,

wall members partially enclosing said outlet means of said inlet line, whereby the exhaust gas enters said packing in a downstream direction and then is directed back through said packing in an upstream direction by said wall members,

drainage control means including an orifice of selected size in the forward bottom end of the reactant compartment so as to permit drainage of molten absorbent material into the molten pool under said pressure gradient while at the same time providing a liquid trap which blocks passage of the exhaust gas into the molten pool thereby causing said exhaust gas to be directed through said packing,

a passageway serially connecting said reactant and demister compartments and directing the hot exhaust gas containing entrained molten material upwardly through said demister compartment,

demisting means including a packing disposed in said demister compartment for separation of entrained molten material from said exhaust gas to provide a resultant dry exhaust gas, and

an outlet port disposed in said demister compartment and positioned downstream from said demister packing for discharging the dry purified exhaust gas from said housing.

3,853,485

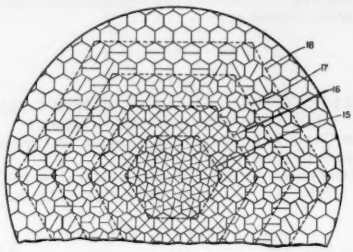
CORE MEMBER FOR CATALYTIC OXIDATION CONVERTER

Robert G. Hogan, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 11, 1972, Ser. No. 313,694

Int. Cl. B01j *9/04*; **B32b** *3/20*; **F01n** *3/14*

U.S. Cl. 23—288 F **10 Claims**



1. A core member for use in a catalytic oxidation converter for internal combustion engine exhaust gases, such member comprising a cylindrical body of a refractory material and embodying a multitude of passages of relatively minute cross-sectional areas extending axially through said body longitudinally parallel with the peripheral wall of such body, such multitude of passages being cross-sectionally defined by networks of relatively thin walls and such multitude including, a plurality of patterns of said passages concentrically surrounding the longitudinal axis of said cylindrical body between such axis and said peripheral wall, said passages increasing in cross-sectional area progressively from a central one of said plurality of patterns of passages radially towards the next pattern of passages.

3,853,486

PROCESS FOR THE MANUFACTURE OF PYROPHOSPHORIC ACID BY CRYSTALLIZATION

Gero Heymer, Hurth-Knapsack, and Horst-Dieter Wasel-Nielen, Erftstadt-Lechenich, both of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack near Cologne, Germany

Filed Feb. 23, 1972, Ser. No. 228,772

Claims priority, application Germany, Feb. 25, 1971, 2108857

Int. Cl. B01d *9/00*; **C01b** *25/24*

U.S. Cl. 23—301 R **1 Claim**

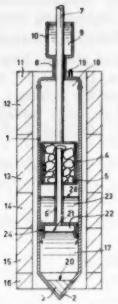
1. A process for the manufacture of pure, crystallized pyrophosphoric acid with a strength of at least 95 percent from polyphosphoric acid with a P_2O_5-concentration between 79 and 81 weight percent and crystallized pyrophosphoric acid as seeding agent, which comprises adding to the polyphosphoric acid between 1 and 5 weight percent of crystallized pyrophosphoric acid, heating the resulting mixture for a period of about 2 hours, while continuously kneading it and with the exclusion of moisture, to temperatures between 40° and 55°C, cooling the mixture once upon the start of crystallization down to temperatures between 20° and 35°C, and further kneading the mixture for a period between 0.5 and 3 hours from the start of crystallization, the said mixture being maintained at temperatures of at most 50°C by dissipating the heat of crystallization.

3,853,487

METHOD OF FORMING CRYSTALS BY THE CONTROL OF VOLATILE CONSTITUENT DIFFUSION PATH DISTANCES THROUGH A MELT

Johannes Meuleman, Caen, and Guy Michel Jacob, Rosel, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 9, 1973, Ser. No. 339,541
Claims priority, application France, Mar. 15, 1972, 72.09009
Int. Cl. B01j 17/00
U.S. Cl. 23—301 SP 12 Claims



1. A method of manufacturing in a space crystalline rods of a compound from a liquid solution of the said compound in at least one of the constituents thereof, which solution is constantly supplied with at least one constituent which is more volatile than the solvent, said more volatile constituent diffusing, through the solution which shows a concentration gradient of the more volatile constituent, to a crystallization interface present in a steep temperature gradient, said temperature gradient being gradually traversed by said space, characterized in that the distance in the liquid between said crystallization interface on the one hand and another face present between the said liquid with the concentration gradient and a portion of the liquid face where said concentration gradient terminates of constant concentration which is constantly supplied with the more volatile constituent on the other hand, is maintained constant during the whole crystal growth by the addition of the constituent serving as a solvent.

3,853,488

PROCESSING OF CALCIUM CARBONATES

Martin Taylor, St. Austell, England, assignor to English Clays Lovering Pochin & Company Limited, Cornwall, England

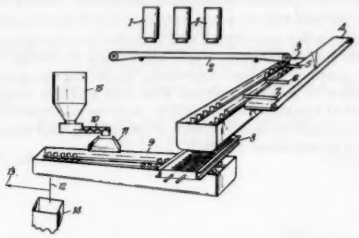
Filed May 1, 1972, Ser. No. 249,004
Claims priority, application Great Britain, May 7, 1971, 13835/71
Int. Cl. C01f 11/18
U.S. Cl. 23—293 A 10 Claims

1. A method of treating a wet processed natural calcium carbonate to produce a bulk-handlable material which method comprises the steps of:

a. partially dewatering the wet processed natural calcium carbonate to obtain a superficially dry particulate material containing from 17 to 25% by weight of water; and

b. thereafter subjecting the partially dewatered calcium carbonate to mechanical working in a mixer so that water is expressed from within the body of the particles to the surface thereof and

mixing additional powdered calcium carbonate containing not more than 5% by weight of water with the partially dewatered calcium carbonate in an amount sufficient to absorb the free surface water liberated from within the particles of calcium carbonate by said



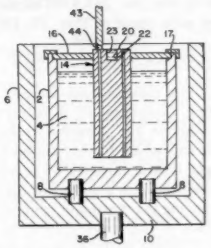
mechanical working to produce a bulk-handleable material containing 10 to 16% by weight of water.

3,853,489

NON-WETTING AID FOR GROWING CRYSTALLINE BODIES

John S. Bailey, Charlestown, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.

Filed Nov. 8, 1971, Ser. No. 196,446
Int. Cl. B01j 17/18
U.S. Cl. 23—301 SP 12 Claims



1. A method of producing an elongate substantially monocrystalline body of a first selected material having a substantially constant cross-section of predetermined shape, said method comprising establishing a liquid film of said first selected material on a substantially horizontally extending surface of a second solid material that is wettable by said first selected material and has a predetermined configuration at least partly defined by a third liquid or solid material that is not wetted by said film so that said film terminates at the boundary of said third material, growing a substantially monocrystalline body of said first material from said film and pulling said body vertically away from said film as it grows, and replenishing said film by feeding an additional quantity of said first material in liquid form to said surface via at least one opening in said surface.

3,853,490

GRANULATION OF POTASSIUM SULFATE

Albert F. Boeglin; Edward A. Chowning, and Sam E. Tschappler, all of Carlsbad, N. Mex., assignors to International Minerals & Chemicals Corporation, Libertyville, Ill.

Filed Jan. 22, 1973, Ser. No. 325,504
Int. Cl. C01d 5/00, 5/18
U.S. Cl. 23—313 6 Claims

1. A method of granulating potassium sulfate comprising establishing a mass of potassium sulfate crystals characterized by (1) crystal size distribution of at least 50 percent by weight −6 +65 mesh, about 10 to about 30 percent by weight −200 mesh, with the remainder being essentially −65 +200 mesh; (2) a moisture content in the range of about 7 to about 12

percent by weight of the crystals; and (3) the presence of a surface active agent capable of substantially enhancing potassium sulfate crystal growth in the amount of about 0.025 to about 0.075 percent by weight of the crystals, rolling said mass in a confined bed on a substantially smooth moving surface to form granules, and drying said granules to a moisture content of less than about ½ of 1 percent by heat exchange between said granules and hot combustion gases, the maximum temperature of gases in contact with said granules being maintained at less than about 1,200°F., and the maximum temperature reached by said granules in the drying step being maintained below about 550°F.

3,853,491

TUNGSTEN FILAMENT HAVING UNIFORM CONCENTRATION GRADIENT OF THORIA PARTICLES

Thomas E. Dunham, Cleveland Heights, Ohio, assignor to General Electric Company, New York, N.Y.

Filed Sept. 1, 1972, Ser. No. 285,939The portion of the term of this patent subsequent to Mar. 19, 1991, has been disclaimed.

Int. Cl. C22c *1/05, 19/00*

U.S. Cl. 29—182.5 **6 Claims**

1. A thermally and mechanically worked dispersion alloy member consisting essentially of a recrystallized tungsten grain structure wherein the tungsten grains are small size equiaxed crystals and which further contains an average 1–2 percent by weight thoria particles of smaller size than the tungsten grains distributed in a uniformly diminishing concentration gradient having the maximum concentration located at the exterior surface of said member with no sharp compositional variation of thoria particles along said concentration gradient.

3,853,492

TUNGSTEN INCANDESCENT BODY CONTAINING FOREIGN SUBSTANCES AND PROCEDURE FOR ITS PREPARATION

Tivadar Millner, 108 Mikszat Kalman u, Budapest IV; Laszlo Bartha, 76-78 Toldy F. u, Budapest I, and Jeno Neugebauer, 131, Bocskay u, Budapest XV, all of Hungary

Filed June 27, 1972, Ser. No. 266,578

Claims priority, application Hungary, Mar. 16, 1972, OE 2339

Int. Cl. C22c *1/05, 22/00*

U.S. Cl. 29—182 **2 Claims**

1. A sintered tungsten incandescent body containing 0.01–100 ppm beryllium, at least one member selected from the group consisting of 10–100 ppm potassium and 0.1–10 ppm thallium, and at least one member selected from the group consisting of 0.5–2 ppm of aluminum and 0.01–5 ppm gallium, containing less than half as much silicon as beryllium by weight, balance essentially tungsten.

3,853,493

HIGH-FRICTION CERMET MATERIAL

Olga Evgenievna Kestner, ulitsa Baumana 43/1, kv. 12; Vasily Ivanovich Vinokurov, ulitsa Spartakovskaya, 20/34, kv. 39; Irina Petrovna Axenova, ulitsa Garibaldi 8, korpus 2, kv. 63; Galina Tadeushevna Ozemblovskaya, 2 Novopodmoskovny pereulok 5, kv. 72; Amayak Pogosovich Shakhpenderian, Frunzenskaya Naberezhnaya 28, kv. 114; Anatoly Alexeevich Shagurin, Izmailovsky bulvar, 51/14, kv. 48; Larisa Nikolaevna Popova, Bratskaya ulitsa 23, korpus 1, kv. 107, all of Moscow; Ivan Ivanovich Zverev, ulitsa Sovetskaya 7/9, kv. 23, Balashikha Moskovskoi oblasti; Sergei Sergeevich Kokonin, prospekt Lenina 27, kv. 12, Balashikha Moskovskoi oblasti; Anatoly Alexandrovich Matveer, prospekt Lenina 47a, kv. 40, Balashikha Moskovskoi oblasti; Alexandr Mikhailovich Petrunin, prospekt Lenina 53, kv. 14, Balashikha Moskovskoi oblasti; Evgeny Sergeevich Sherstnev, ulitsa Sovetskaya, 16a, kv. 59, Balashikha Moskovskoi oblasti; Anatoly Alexeevich Akimtsev, prospekt Lenina 8, kv. 35, Balashikha Moskovskoi oblasti, and Nikolai Mitrofanovich Sklyarov, ploschad Vosstania 1, kv. 396, Moscow, all of U.S.S.R.

Filed Mar. 1, 1974, Ser. No. 447,246

Int. Cl. C22c *29/00*

U.S. Cl. 29—182.5 **1 Claim**

1. A sintered high-friction cermet material consisting essentially of

boron nitride, 2 to 10 wt.%;
copper, 6 to 15 wt.%;
graphite, 3 to 11 wt.%;
boron oxide, 4 to 10 wt.%;
silicon carbide, 4 to 10 wt.%; and
iron, the balance.

3,853,494

CARD CLOTHING

Werner Graf, Freinenbach, Switzerland, assignor to Graf & Cie. A.G., Rapperswil, Switzerland

Filed May 8, 1972, Ser. No. 252,516

Claims priority, application Switzerland, May 12, 1971, 7037/71

Int. Cl. B21f *45/10*

U.S. Cl. 29—193.5 **11 Claims**

1. A card clothing containing at least one wire-shaped structure having a sawtooth profile formed of alloyed steel wherein the alloy contains 0.3 to 2.0 percent by weight carbon, 0.05 to 2.5 percent by weight silicon, 0.05 to 2.0 percent by weight manganese and 0.01 to 2.0 percent by weight vanadium, said alloyed steel having a hardness substantially higher than that of the corresponding non-alloyed steel and up to about 1,200 based on the Vickers hardness test.

3,853,495

FITMENT OF HANDLES TO BLADED HAND TOOLS

George Cecil Derby Shire, Sheffield, England, assignor to The Jacobs Manufacturing Company Limited, Sheffield, England

Filed Feb. 27, 1974, Ser. No. 446,225

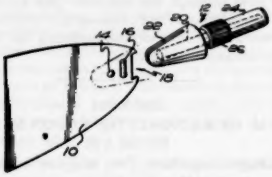
Claims priority, application Great Britain, Mar. 5, 1973, 10635/73

Int. Cl. B23p *3/00*

U.S. Cl. 29—460 **6 Claims**

1. In a method of making a bladed hand tool, the steps of forming a bolster having a hole extending axially from one end to within a short distance of its other end; slotting said other end to a depth sufficient to intersect said axial hole, the width of the slot being less than the diameter of the hole extending axially of the bolster; forming a blade with a root end having at least one recess; inserting said root end of the blade into the

slot in the bolster so that the recessed portion of said blade is hidden by the bolster; and injecting a filler material along the



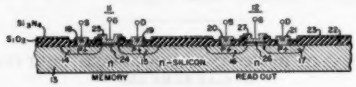
axial hole of the bolster so that it flows into the recessed portion of the blade to firmly unite the bolster and blade.

3,853,496

METHOD OF MAKING A METAL INSULATOR SILICON FIELD EFFECT TRANSISTOR (MIS-FET) MEMORY DEVICE AND THE PRODUCT

Manjin J. Kim, Liverpool, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Jan. 2, 1973, Ser. No. 319,991
Int. Cl. H01l *11/14*
U.S. Cl. 29—571 **6 Claims**



1. The method of making a metal insulation silicon field effect transistor (MIS-FET) memory device, comprising the steps of:

a. forming an insulating SiO_2 layer over a low resistivity substrate,

b. etching openings in said SiO_2 layer and diffusing in source and drain regions,

c. sealing said source and drain regions with SiO_2 and opening an intermediate channel region,

d. immersing the substrate in concentrated nitric acid to form a low temperature chemical oxide of silicon over said channel region under self-limiting conditions in order to produce a first insulating layer about 20A in thickness,

e. forming a second insulation layer over said chemical oxide to provide a region of deep traps at their interface,

f. opening said source and drain contact regions, and

g. metallizing said source and drain regions and said second insulating layer over said channel region.

3,853,497

LOW POUR VACUUM GAS OIL COMPOSITIONS

Kenneth D. Miller, Nederland, and Levi C. Parker, Port Arthur, both of Tex., assignors to Texaco, Inc., New York, N.Y.

Filed Nov. 8, 1972, Ser. No. 304,676
Int. Cl. C10l *1/14*
U.S. Cl. 44—62 **2 Claims**

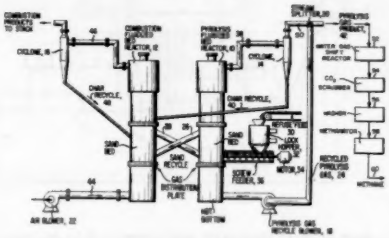
1. A vacuum gas oil fuel oil composition comprising a major amount of vacuum gas oil boiling between about 450° and 1,050°F. and having a wax content between about 0.5 and 20 wt. % containing 1). between about 1 and 20 wt. % of an asphaltene petroleum residuum having an asphaltene content of between about 4 and 15 wt. % and an API Gravity of between about 5° and 20° and a carbon residue of between about 5 and 25 wt. % and 2). between about 0.002 and 3 wt. % of an interpolymeric poly(n-alkylacrylate) of a molecular weight between about 3,000 and 100,000 wherein said n-alkyl is at least 18 carbons and where at least 70 wt. % of said n-alkyl is of 20 to 24 carbons consisting of between about 2 and 65 wt. % C_{20} alkyl, between about 18 and 65 wt. % C_{22} alkyl, and between about 8 and 35 wt. % C_{24} alkyl, said poly(n-alkylacrylate) incorporated in said base stock at a temperature above the solution point of said wax.

3,853,498

PRODUCTION OF HIGH ENERGY FUEL GAS FROM MUNICIPAL WASTES

Richard C. Bailie, 1323 Cherry Ln., Morgantown, W. Va. 26505

Filed June 28, 1972, Ser. No. 267,233
Int. Cl. C10j *3/12*
U.S. Cl. 48—209 **15 Claims**



1. A method for the gasification of municipal waste to produce high energy fuel gas, which method comprises:

i. pyrolyzing a municipal waste feed, in an inert, oxygen-free atomosphere, in an endothermic pyrolysis reaction zone to thus gasify the same in the absence of substantial by-production of liquid reaction products;

ii. the said pyrolysis reaction zone comprising a dense bed of fluidized, inert particulate solids;

iii. said pyrolysis reaction operating under essentially isothermal conditions;

iv. the heat energy required for said pyrolysis reaction being generated by exothermic combustion reaction in a distinct, exothermic combustion reaction zone;

v. said exothermic combustion reaction zone also comprising a bed of inert particulate solids;

vi. the fluidized, inert particulate solids in said endothermic pyrolysis reaction zone being in communicating relationship with the inert particulate solids in said exothermic combustion reaction zone;

vii. said generated heat of exothermic combustion reaction being transferred to said endothermic pyrolysis reaction zone to provide the said heat energy requirements thereof, without substantial transference of either reactants for or reaction products of said exothermic combustion reaction, by circulating the respective inert particulate solids between the said exothermic combustion reaction zone and the said endothermic pyrolysis reaction zone; and

viii. whereby the pyrolysis gas product comprises the high energy fuel gas.

3,853,499

APPARATUS FOR FORMING PROGRESSIVE POWER LENS BLANKS

Lawrence H. Larson, 1612 Don San Geroge Ct., Orlando, Fla. 32806, and Don J. Tindall, Box 1101, Orlando, Fla. 32802

Continuation-in-part of Ser. No. 284,098, Aug. 28, 1972, abandoned. This application Feb. 23, 1973, Ser. No. 335,256
Int. Cl. B24b *13/04*
U.S. Cl. 51—33 R **6 Claims**

1. A progressive power lens blank forming machine comprising:

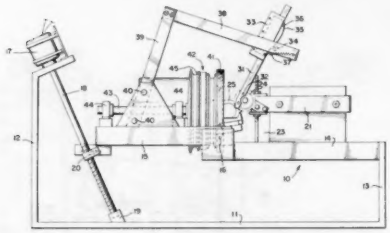
a. a static frame,

b. a movable frame pivoted for movement relative to said static frame,

c. lens grinding abrasive means mounted for rotation upon said movable frame,

d. a first control means connected between said static and movable frame for regulating the amount of pivotal movement between said frames,

e. lens holding means having a base, a pair of arms one end of each of which is pivoted to said base, one of said arms being a short arm and the other of said arms being a long arm, said long arm being connected at its upper end to be gear driven from said static support and a complemental



gear in mesh therewith and connected to be rotated by said movable frame at a rate proportional to the rocking movement of said movable frame relative to said static frame to cause wiping of said lens holder across said lens grinding abrasive to grind a lens blank of progressive thickness

f. a second control means connected between said movable frame and said lens holding means regulating the rate of movement of said lens holding means across said abrasive means as said movable frame is moved by said first control means relative to said static frame to cut a lens blank of progressive thickness from one extremity to the other.

3,853,500

METHOD AND APPARATUS FOR DEGASSING VISCOUS LIQUIDS AND REMOVING GAS BUBBLES SUSPENDED THEREIN

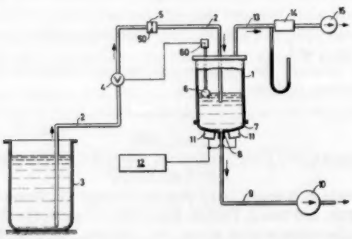
Hans-Ulrich Gassmann; Ching-Muh Chen, both of Fribourg, Switzerland, and Michel Vermot, Sao Paulo, Brazil, assignors to Ciba-Geigy AG, Basle, Switzerland

Filed Jan. 22, 1973, Ser. No. 325,439

Claims priority, application Switzerland, Jan. 25, 1972, 01074/72

Int. Cl. B01d *51/08*

U.S. Cl. 55—15 **11 Claims**



1. A method of degassing viscous liquids and for removing gas bubbles suspended therein, said method comprising; passing the liquid through an apertured partition to degas and form bubbles in the liquid, the area of the aperture being a maximum of one-fifth the cross-sectional area of the stream of liquid introduced to said partition; passing the liquid, without removing gas bubbles therefrom, from the partition into a gas tight vessel; reducing the pressure inside the vessel such that the liquid flow through the aperture due to such pressure reduction, averaged over the cross-section thereof, is between 3 and 10 metres per second; and agitating the liquid by subjecting it to ultrasonic vibrations.

3,853,501

REMOVAL OF RADIOACTIVE RADON DAUGHTERS FROM AIR

Carl W. Stringer, Sugarland, Tex., assignor to Radon Development Corporation, Houston, Tex.

Filed July 16, 1973, Ser. No. 379,606

Int. Cl. B01d *19/00, 27/00, 47/00*

U.S. Cl. 55—37 **25 Claims**

1. In the method for removing radioactive radon daughters from air which comprises filtering air contaminated with radon daughters through a water-wetted filter to capture the radon daughters in the water, the improvement which comprises:

circulating the water contaminated with the captured radon daughters through filter medium comprising a water-insoluble granular substrate wherein the surface of the substrate has been dried of water and then wetted with a normally liquid hydrocarbon; and

returning the filtered water to again wet the air filter and capture additional radon daughters.

3,853,502

METHOD OF REMOVING SO_3 AND H_2SO_4 MIST FROM A GAS STREAM

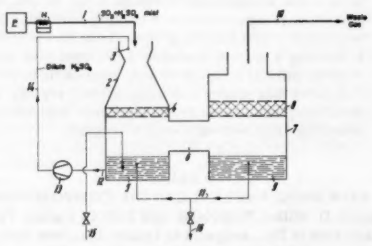
Karl-Heinz Dorr, Maimz; Hugo Grimm, Frankfurt am Main; Michael Tacke, Offenbach, and Robert Peichl, Kelheim, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main and Sud-Chemie AG, Munich, both of, Germany

Filed Sept. 7, 1972, Ser. No. 287,104

Claims priority, application Germany, Sept. 11, 1971, 2145546

Int. Cl. B01d *53/14*

U.S. Cl. 55—48 **4 Claims**



1. In the production of sulfuric acid wherein:

a gas stream containing sulfur dioxide is subjected to contact catalysis to form sulfur trioxide therein,

the sulfur trioxide is at least in part removed from the gas stream by absorption in at least one absorber stage by effecting contact of the gas stream with sulfuric acid therein, and

a dry contact-process end gas containing sulfur trioxide and/or sulfuric acid mist emerges from the final absorber stage, the improvement which consists of a method of removing sulfur trioxide and/or sulfuric acid mist from said dry contact-process end gas, said improvement comprising the steps of:

a. intimately contacting said dry-process end gas subsequent to the final absorber stage with a water-diluted sulfuric

acid treating solution having a sulfuric acid concentration of 40 to 90 percent by weight to increase the water-vapor content of said end gas, to convert sulfur trioxide therein to sulfuric acid and to convert sulfuric acid mist therein to separable sulfuric acid droplets, and

to form a mixture of sulfuric acid liquid phase and a gas phase, said water-diluted sulfuric acid treating solution being injected into said end gas in a downwardly directed Venturi tube to produce a downwardly flow of said mixture of said phases, and further passing said downwardly flowing mixture through a packing layer downstream of said Venturi tube;

b. separating the liquid and gas phases formed in step (a) subsequent to the contact of said drying contact-process end gas with said sulfuric acid treating solution having said sulfuric acid concentration of 40 to 90 percent by weight to recover sulfuric acid as the liquid phase, said liquid and gas phases being separated by collecting part of said liquid phase below said packing layer, deflecting said gas phase at right angles downstream of said packing layer, and passing said deflected gas stream through a further packing layer for removal of additional quantities of said liquid phase therefrom;

c. discharging the gas phase after separation of the liquid phase therefrom in step (b) as an exhaust gas substantially free from sulfuric acid; and

heating said end gas prior to contact of said treating solution therewith in step (a) and subsequent to said final absorber stage.

3,853,503

ENERGY ABSORBER FOR LASER PYROLYSIS

Orville F. Folmer, Jr., Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Filed June 4, 1973, Ser. No. 366,810

Int. Cl. B01d *15/08*

U.S. Cl. 55—67 **2 Claims**

1. In a method for preparing a material for gas-liquid chromatographic analysis by pyrolyzing a portion thereof with a laser beam, the improvement comprises pyrolyzing said material while in intimate contact with a powdered metal selected from the group consisting of iron, copper, gold and tantalum.

3,853,504

APPARATUS FOR CONTINUOUSLY PRECIPITATING LIQUID METALS FROM GASES

Enno Buscher, Bergisch-Gladbach; Friedrich Eils, Bremen; Walter Jansing, Bensberg-Moitzfeld; George Kirchner, Bensberg-Frankenforst, and Dieter Markfort, Forsbach, all of Germany, assignors to Interatom Internationale Atomreaktorbau GmbH, Bensberg/Koln, Germany

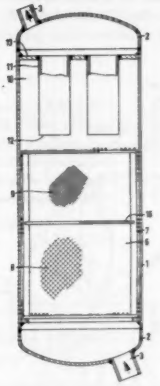
Filed July 22, 1971, Ser. No. 165,002

Claims priority, application Germany, July 23, 1970, 2036568; Mar. 17, 1971, 2112891

Int. Cl. B01d *51/00*

U.S. Cl. 55—80 **12 Claims**

1. Method of continuously precipitating liquid metal from gas in which the liquid metal is finely distributed which comprises the steps of heating the gas bearing the liquid metal to a temperature above the saturation temperature thereof, and then cooling the gas bearing the liquid metal to a temperature



still exceeding the solidification temperature of the liquid metal.

3,853,505

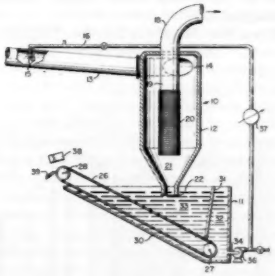
REMOVAL OF HAZE-FORMING CONSTITUENTS FROM WOOD DRYER EFFLUENT

Vincent J. Tretter, Jr., Vancouver, Wash.; Leslie M. Stefensen, Springfield, and Robert A. Rydell, Corvallis, both of Oreg., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Filed July 16, 1973, Ser. No. 379,325

Int. Cl. B01d *53/14*; **F26b** *21/06*

U.S. Cl. 55—85 **12 Claims**



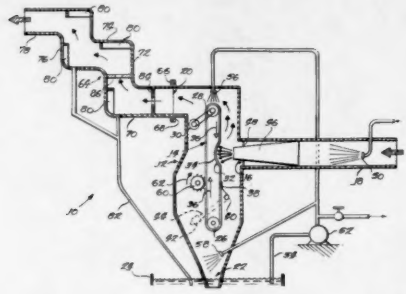
1. A process for the removal of haze-forming constituents from wood veneer dryer effluent which comprises, passing the effluent through a conduit, spraying water into the effluent in sufficient amount to cool the effluent to a temperature in the range of 120° to 180° F to condense the haze-forming constituents and to disperse water in the effluent in an amount of at least 10 grains per cubic foot of effluent, passing the cooled effluent containing the water spray in the conduit under turbulent flow for a distance to obtain a pressure drop of at least ½ inch of water to agglomerate the condensed haze-forming constituents in presence of the dispersed water, and removing the condensed, agglomerated particles of the haze-forming constituents from the effluent.

3,853,506

POLLUTION CONTROL APPARATUS AND METHOD

Ladislav J. Pircon, Emlhurst, Ill., assignor to The Purity Corporation, Elk Grove Village, Ill.

Filed Oct. 18, 1971, Ser. No. 190,248
Int. Cl. B01d *45/10*
U.S. Cl. 55—91 14 Claims



1. The method of removing pollutants from a gas stream comprising the steps of:

a. directing a moving pollutant-containing gas stream through a gas stream inlet confronting the concave portion of an endless traveling belt of substantially imperforate material disposed within a chamber with an impingement portion thereof confronting said gas stream inlet;

b. driving said belt trained over an idler roler which is spaced from a driving means and includes an adjustment means to provide said concavity;

c. removing the pollutant impinged on said traveling belt, and;

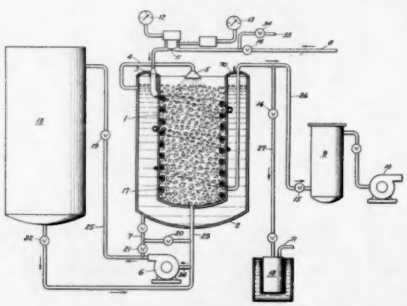
d. separately removing the clean gas stream.

3,853,507

COLD TRAP UNIT

Paul S. Monroe, Elyria, Ohio, and Michael C. Chervenak, III, Portage, Pa., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Dec. 31, 1947, Ser. No. 795,036
Int. Cl. B01d *53/00*
U.S. Cl. 55—269 8 Claims



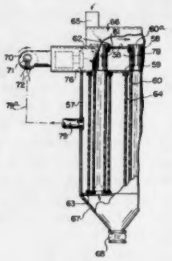
1. A gas recovery system of the character described comprising a casing, a length of tubing disposed within the casing for the passage of gases, means for feeding gases to the length of tubing, means in said casing for cooling the tubing for solidifying said gases on the walls thereof, means for applying heat to the tubing for converting the solids to liquid form, and means for removing the liquid from the tubing and storing it.

3,853,508

APPARATUS FOR BAG COLLECTION OF DIRT

Mack Gordon, Medina, and John F. Phillippi, Mentor, both of Ohio, assignors to Aerodyne Development Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 186,373, Oct. 4, 1971. This application June 14, 1972, Ser. No. 262,660
Int. Cl. B01d *46/04*
U.S. Cl. 55—302 3 Claims



1. Bag apparatus for use in a bag collector for dirt entrained in a fluid stream wherein an upstream inner bag and a downstream outer bag are concentric and closely adjacent; said apparatus comprising a housing, vertically supported in said housing, spaced inner and outer generally cylindrical fluid permeable bags, there being an inlet for dirty fluid stream in said housing and means connected with said inlet and an open end of an upstream bag communicating with the open end of said upstream bag, there being an outlet in said housing for clean fluid communicating with said housing and spaced downstream of said outer bag, means for creating a pressure differential between said inlet and said outlet to cause a dirt collecting fluid flow between them passing through said inner and outer bags in series, means in said housing and connected in flow communication with the space between said bags for intermittingly creating a fluid pressure between said bags sufficient to partially collapse said inner bag upstream whereby said dirt is collected from the inner surface of said inner bag; bag support means secured to said inner bag holding relatively fixed at all times substantially linear longitudinally extending narrow zones of said inner bag; said zones being spaced around said inner bag circumferentially at a small number of points greater than two, whereby blow-down fluid may be intermittingly introduced between said inner and outer bags to cause said inner bag to flex inwardly to release dirt from the inner surface of said inner bag at which time said bag support means is so constructed and arranged that said pressurized fluid cannot cause opposite sides of said inner bag to touch each other during said flexing.

3,853,509

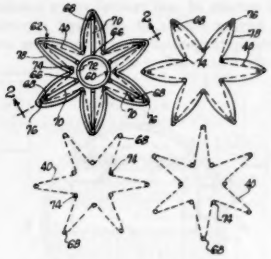
BAG TYPE FILTER DEVICE

Raymond M. Leliaert, 3612 Brentwood Dr., South Bend, Ind. 46628

Filed May 4, 1973, Ser. No. 357,247
Int. Cl. B01d *46/08*
U.S. Cl. 55—341 7 Claims

1. In a bag type filter device having a filter housing with an inlet for passage of dirty gas to be cleaned into the housing and an outlet for passage of clean gas from the housing, a cell plate subdividing the housing into a clean gas plenum chamber in communication with the outlet and a dirty gas plenum chamber in communication with the inlet, with openings through the cell plate communicating the dirty gas plenum chamber and the clean gas plenum chamber, filter tubes extending into the dirty gas plenum chamber with an open end in communication with openings in the cell plate and closed at the other end, the improvement in which the filter tube comprises a

filter bag, an inner wire cage and an outer wire cage with the filter bag disposed in between, with the inner wire cage having a plurality of circumferentially spaced rigid outer wires extending in the longitudinal direction and with the outer cage having a plurality of circumferentially spaced inner and outer wires also extending in the longitudinal direction, with outer wires of the inner cage positioned a greater distance from the center of the filter tube than inner wires of the outer cage but



less than the outer wires of the outer cage with the outer wires of the outer cage being substantially radially aligned with the outer wires of the inner cage, with the said outer wires of the inner cage and the inner wires of the outer cage being circumferentially offset one from the other, the filter extending sequentially outwardly about the outer wires of the inner cage and inwardly about the inner wires of the outer cage to support the filter bag therebetween in a corrugated arrangement.

3,853,510

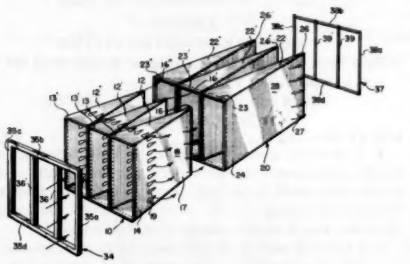
TWO STAGE HIGH EFFICIENCY AIR FILTER

Richard R. Meyer, Glen Ellyn; John M. Kearney, Wauconda, and Philip J. Burnstein, Skokie, all of Ill., assignors to Systems Discipline, Inc., Des Plaines, Ill.

Continuation of Ser. No. 289,575, Sept. 15, 1972, abandoned. This application Mar. 4, 1974, Ser. No. 447,518

Int. Cl. B01d *46/04*

U.S. Cl. 55—368 **1 Claim**



1. An apparatus for filtering particulate matter containing relatively fine and relatively coarse particles from an air stream, said apparatus comprising:

at least one wedge-shaped filter unit having a first wedge-shaped filter comprising filter walls disposed inside a second wedge-shaped filter, the outside surface of said first wedge-shaped filter and the inside surface of said second wedge-shaped filter defining a cavity therebetween;

said first wedge-shaped filter and said second wedge-shaped filter having a common open upstream end;

a plurality of perforations in said filter walls near the upstream end of said first wedge-shaped filter the size of said perforations being greater than the porosity of said filter walls;

so that said perforations direct a substantial portion of said relatively fine particles to said cavity while at the same time permitting said relatively coarse particles to be filtered by the filter walls of said first wedge-shaped filter when the first wedge-shaped filter is less than completely occluded with particulate matter; and,

means for maintaining said common upstream end in an open position.

3,853,511

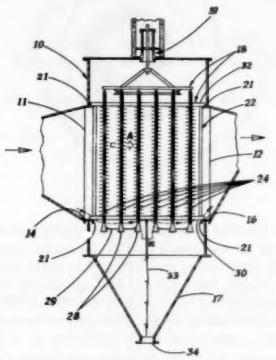
ELECTRICAL PRECIPITATING APPARATUS

Xaver Johann Huppi, Zurich, Switzerland, assignor to Elex Limited AG, Zurich, Switzerland

Filed Feb. 16, 1972, Ser. No. 226,856

Int. Cl. B03c *3/76*

U.S. Cl. 55—112 **1 Claim**



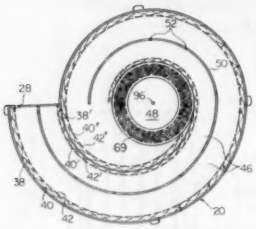
1. An electrical precipitating apparatus for removing suspended particles from a gas comprising: a housing having an opposed gas inlet and a gas outlet and defining a passageway for a stream of gas; the lower portion of said housing defining a hopper below said passageway with the lower edges of the gas inlet and gas outlet lying substantially in a common horizontal plane; an electrode system in said passageway including grounded collecting electrodes supported by rapping bars at both the top and bottom thereof said top supporting rapping bars resting on electrode ledge support means attached to said housing and said bottom supporting rapping bars also attached to said housing and extending to the plane defined by said lower edge of said gas inlet and outlet, said collecting electrodes extending longitudinally in spaced planes parallel to the direction of gas flow through said passageway, said electrode system further including high voltage discharge electrodes extending longitudinally in said passageway parallel with and transversely spaced from said collecting electrodes in successive relationship to provide spaced rows of discharge electrodes between the spaced rows of collecting electrodes, said discharge electrodes being spaced longitudinally of said gas passageway and creating charging fields extending transversely of the gas passageway in longitudinally spaced vertical planes, said discharge electrodes being further defined in that they are suspended from the upper portion of said housing by suspension means and maintained in their relative positions by weights secured to their lower ends said weights being separated and positively positioned with respect to one another by a spacing frame having a dividing slot therein; baffle means comprising a single flat sheet of material located equidistant from said gas inlet and said gas outlet supported within said housing transverse to said gas passageway and extending upwardly through said dividing slot in said discharge electrode spacing frame at least to the horizontal plane defined by the lower edges of the gas inlet and gas outlet, said apparatus being further defined in that the distance between said baffle

means and said discharge electrode weights, and spacing frame is such that there is no arcing therebetween.

3,853,512
AIR PURIFIER

Kazuo Hayashi, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed June 1, 1973, Ser. No. 365,851
Claims priority, application Japan, Nov. 29, 1972, 47-137325; Nov. 29, 1972, 47-137328; Nov. 29, 1972, 47-137326
Int. Cl. B03c *3/12, 3/14*
U.S. Cl. 55—124 **7 Claims**



1. An air purifier comprising a generally cylindrical casing having an air inlet opening and an air outlet opening located substantially centrally of the casing, dust collecting wall means positioned within said casing and providing a continuous passageway extending spirally between the air inlet and outlet openings in said casing, said wall means including at least one dust collecting electrode for connection to a first electric terminal, and at least one charging electrode extending spirally in and along said passageway and electrically isolated from said collecting electrode, said charging electrode being for connection to a second electric terminal having a polarity opposite to the polarity of the first electric terminal for thereby establishing an electric field between the charging and collecting electrodes so that particles of dust entrained in air directed into said passageway through said air inlet opening become ionized and are attracted to said dust collecting wall means as the air is circulated through said passageway from said air inlet opening to said air outlet opening, said dust collecting wall means further including a dust collecting filter attached to the surface of said dust collecting electrode facing said passageway and an additional dust collecting electrode of a wire mesh form, said additional dust collecting electrode being attached to the surface of said dust collecting filter facing said passageway and electrically connected to the first named dust collecting electrode.

3,853,513
VAPOR-LIQUID SEPARATION APPARATUS

Don B. Carson, Mt. Prospect, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

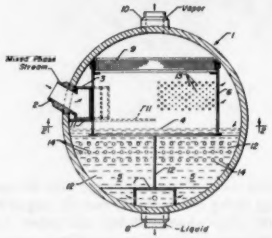
Filed July 2, 1973, Ser. No. 375,967
Int. Cl. B01d *19/00, 50/00*
U.S. Cl. 55—185 **1 Claim**

1. An apparatus for the separation of a mixed-phase fluid stream, in which apparatus a quantity of liquid is maintained, and which comprises:

a. an outer spherical vessel having an enclosed inner volume and hereinafter described fluid transfer means communicating with said inner volume;

b. a central vapor conduit having walls extending downward from the upper surface of the internal volume of said conduit into the lower portion of the vessel to a point below the normal liquid level maintained in the vessel and in open communication with this liquid, said normal liquid level being at about the horizontal centerline of said vessel, said walls having perforations which allow the passage of material horizontally into the central vapor conduit, the perforations being above said normal liquid level;

c. a mixed-phase fluid inlet means positioned above the bottom of said central vapor conduit and passing through a wall of said outer vessel, said inlet means communicating with the internal volume of the outer vessel which is located outside of said central vapor conduit, said inlet means having means to discharge incoming material substantially tangentially and in only one angular direction to the inner surface of said vessel;



d. a demisting means located within said central vapor conduit above said inlet means and extending across the horizontal cross-sectional area of said vapor conduit at a point above said perforations in the conduit wall, said demisting means comprising a circular pad of woven wire fabric;

e. a vapor outlet means passing through a wall of the outer vessel and communicating with the internal volume of said vapor conduit above said demisting means; and,

f. a liquid outlet means passing through a wall of the outer vessel and communicating with the internal volume of the outer vessel at a point located within the lower portion of the vessel below the normal liquid level maintained in the vessel.

3,853,514
MOVABLE DEMISTER SYSTEM

Willem Post, Redding, Conn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed July 30, 1973, Ser. No. 383,752
Int. Cl. B01d *45/08*
U.S. Cl. 55—242 **7 Claims**

1. A movable demisting system, including cleaning means for the continuous removal of any deposition of solid materials on the individual demisting members following their movement across the gas stream outlet portion of a gas contacting chamber, said system comprising in combination,

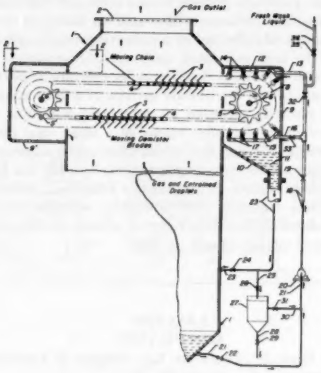
a. a movable carrier means, a multiplicity of spaced apart and elongated demisting members of chevron type comprising parallely positioned, spaced apart zig-zag-form plate-like members to provide impingement surfaces and tortuous paths for the gas stream passing through said chamber, said demisting members being connected to said movable carrier means to thereby form a movable arrangement of gas contacting demisting members,

b. said carrier means being positioned within and across a demisting portion of said chamber in a manner to carry said demisting members transversely across said chamber and across the path of the gas flow therethrough,

c. drive means connective to said carrier means, whereby the latter and said connecting demisting members can be caused to be moved across said chamber, and

d. a demisting member cleaning section connected to said chamber and pressurized liquid spray means therein positioned to encompass the full lengths of a portion of the

demisting members connecting with said carrier means, said cleaning section including a plurality of nozzle means as said liquid spray means to direct spray streams positioned both above and below said demisting members as said demisting members pass around sprocket wheel means of the drive means effecting a change in direction for said demisting members, said nozzle means being



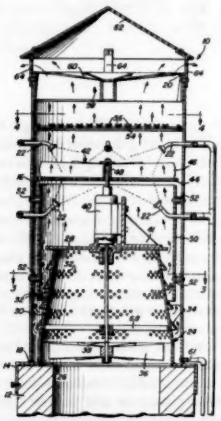
positioned to impinge upon the demister member surfaces as they effect a change in direction to again traverse the gas flow path through said chamber, whereby a cleaning liquid will spray over the surfaces of each member after it has moved across the gas stream flow path in said chamber so as to preclude a solids buildup on said members.

3,853,515

CLEAN AIR SMOKE SCRUBBER

Woodrow W. Davis, Tabb, Va., assignor to Bryan B. Palmer, Newport News, Va., a part interest

Filed Jan. 5, 1973, Ser. No. 321,263
Int. Cl. B01d *47/06*
U.S. Cl. 55—257 **14 Claims**



1. Apparatus for cleaning gases, comprising, in combination:

a. a housing having an inlet and outlet;

b. means for injecting a liquid into the housing and washing gases passing through the housing from the inlet to the outlet; and

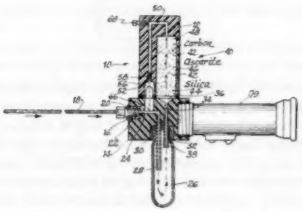
c. means arranged in the housing beneath the injecting means for distributing into the washing liquid gases passing through the housing, the distributing means being a hollow member in the form of a truncated cone having a base of largest area forming an open side arranged adjacent the housing inlet for receiving gases therefrom, a closed side arranged opposite the open side, and a wall arranged extending between the open and closed sides and provided with a plurality of perforations through which gases pass from the hollow member into the housing, and a plurality of annular ledges mounted on an outer surface of the perforated wall and arranged for deflecting washing liquid away from the perforations, each ledge having a wedge-shaped cross section.

3,853,516

GAS DILUTION APPARATUS

Norman A. Lyshkow, 722 W. Fullerton Ave., Chicago, Ill. 60614

Filed Feb. 11, 1974, Ser. No. 441,170
Int. Cl. B01d *53/34*
U.S. Cl. 55—270 **11 Claims**



1. Apparatus for diluting fluids comprising a body, gas inlet means for receiving a gas stream containing a pollutant gas, first passage means in the body communicating with the gas inlet means, trap means mounted on the body and communicating with the first passage means to receive the gas stream flowing therethrough, gas scrubbing means adapted to remove the pollutant gas from the gas stream flowing therethrough, via second passage means which communicate with the trap means and the scrubbing means, gas discharge means adapted to be connected to a zone of reduced pressure, scrubbed gas passage means communicating with the scrubbing means and the discharge means and restricted flow passage means extending into the scrubbed gas passage means and extending into the first passage means whereby reduced pressure applied at the discharge means draws the gas stream through the inlet means and through the first passage means to provide flow of the bulk of the gas stream through the first passage means to the trap means and then through the gas scrubbing means for removal of pollutant gas therefrom and to form an inert diluent gas and to provide flow of a small amount of the gas stream containing pollutant gas through the restricted flow passage means to permit admixture of the small amount of the gas stream containing pollutant gas.

3,853,517

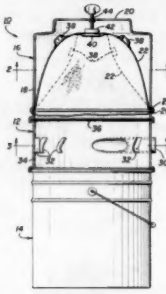
DUST COLLECTOR

Wallace F. Mitchell, Arlington Heights, Ill., assignor to Ammco Tools, Inc., North Chicago, Ill.

Filed Mar. 12, 1973, Ser. No. 340,324
Int. Cl. B01d *41/00*
U.S. Cl. 55—288 **2 Claims**

1. A dust collector, comprising

a container having an inlet opening at the top,
an air inlet section mounted to said container over said opening, and
a filter bag mounted above said air inlet section, means sealably securing said bag to said air inlet section,
a first magnetic member affixed to said bag,
a second magnetic member,
at least one of said magnetic members being a magnet,
means adjustably mounting said second magnetic member externally of said bag such that said first magnetic member is carried by said bag into proximity with said second magnetic member when said dust laden air flows into and inflates said bag,



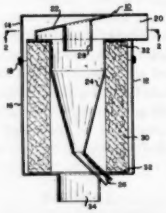
one or more weights affixed to said bag in spaced apart relationship with said first member to be held by said bag in an elevated position when said bag is inflated,
the magnetic force of attraction between said first and second magnetic members being sufficient upon cessation of said air flow into said bag to hold said first member in proximity with said second member until said one or more weights falls by gravity to wrinkle said bag and then to permit said first member and said one or more weights to fall,
whereby interruption of the air flow into said bag dislodges dust particles deposited on the inner surface of said bag.

3,853,518

AIR FILTER SURROUNDING SEPARATOR

Peter K. C. Tu; Alan H. Brooke, and Frank S. Miller, all of Pittsburgh, Pa., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 126,046, March 19, 1971, abandoned. This application Dec. 26, 1973, Ser. No. 428,523
Int. Cl. B01d *50/00*
U.S. Cl. 55—337 **2 Claims**



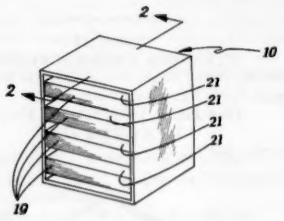
1. An air filter for removing particulate matter and other impurites from an airstream comprising a casing, said casing have an upper part and a lower part, said upper part and said lower part being connected together at an airtight joint by clamping means, said upper part of said casing being provided with an inlet passage which forms a spiral path for said uncleansed inlet air and is in communication with an inlet ducting, said inlet ducting being tangentially directed adapted to impart a preswirling motion to said inlet air passing therethrough, said inlet ducting being connected in communication with the cylindrical portion of a cyclone separator, said air entering said cyclone separator as a swirling mass, said air moving from said cylindrical portion of said cyclone separator toward the conical section of said separator and then back toward said cylindrical portion of said separator, the relatively heavier particles entrained within said air being removed by said separator and collected by a collecting means operatively connected to said separator, said cyclone separator being provided with air outlet ducting at its cylindrical portion in communication with the outside surface of a filter adapted to direct the partially cleansed air from said separator to the outside surface of the filter media of a filter, said filter enclosed within said casing and surrounding said cyclone separator, said filter media removing substantially all of the remaining particulate matter and impurities from said airstream, a third air guide means in communication with the inside surface of the filter media of the filter for effectively directing the now cleansed air out of said air filter.

3,853,519

GAS FILTER

Jimmie D. York, Jr., Louisville, Ky., assignor to American Air Filter Company Inc., Louisville, Ky.

Filed Oct. 3, 1972, Ser. No. 294,552
Int. Cl. B01d *39/02*
U.S. Cl. 55—387 **2 Claims**



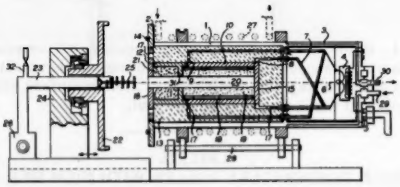
1. A gas filter comprising: a flow-through housing having a dirty gas inlet and a clean gas outlet; a plurality of removable gas filter elements each including a peripheral frame and two attached opposed flow-through faces, at least one of said faces being detachably mounted to said frame, said faces having planar surfaces of texturized expansible-contractable sheet material in a cross-section of peaks and valleys with a biaxially oriented coefficient of restitution whereby the coefficient of restitution in either direction is greater than the coefficient of restitution for untexturized sheet material; mounting means for disposing said gas filter elements within said housing in spaced relationship;
granular carbon filter material contained in said removable gas filter elements and held under compression by said expansible-contractable texturized sheet material faces to prevent settling thereof and insure that all gas passing therethrough passes a minimum preselected distance through said filter material whereby said gas filter elements eliminate the need for additional support means in order to maintain a constant pressure on said carbon filter material.

3,853,520

METHOD FOR MAKING HOLLOW CYLINDERS OF VITREOUS SILICA BY VACUUM HEATING

Karlheinz Rau, Richard-Wagner-Strabe, Hanau (Main), Germany

Filed Dec. 12, 1973, Ser. No. 424,240
Claims priority, application Germany, Dec. 27, 1972, 2263589
Int. Cl. C03b 23/20, 5/16
U.S. Cl. 65—18 8 Claims



1. Method for making hollow cylinders from vitreous silica which comprises placing granular or powdered quartz or SiO_2 starting material on a granular bedding layer in a hollow form revolving about its axis and, as the rotation of the hollow form continues, melting, by means of an electrical power source, and solidifying said starting material, an electrically heatable hollow cylinder of carbonaceous material being disposed in the hollow form, the apertures of the hollow form being hermetically closed with covers after the starting material has been put in, then slowly evacuating the sealed inner chamber thus formed with a vacuum pump to a pressure ranging from 10 to 0.0001 mm Hg, slowly heating the starting material to the melting point while sustaining this pressure, shutting off the electric power source after complete melting, cooling the fused article as rotation continues, shutting off the vacuum pump off and airing the inner chamber before removal of the cover, and then removing the vitreous silica hollow cylinder which still is at a temperature between room temperature and 1,400°C., from the hollow form.

3,853,521

METHOD FOR MAKING GLASS OPTICAL FIBRE PREFORM

John Christopher Greenwood, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 18, 1974, Ser. No. 452,020
Int. Cl. C03b 19/04
U.S. Cl. 65—71 5 Claims

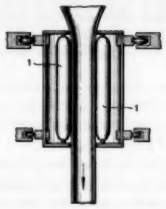
1. A method of making an optical fibre preform for later drawing down into an optical fibre, including the steps of introducing molten cladding glass into a cylindrical mold, forming a tube of cladding glass by spinning the mold about its axis held horizontal while the glass is molten, cooling the glass below its softening point, introducing sufficient core glass into the bore of the tube of cladding glass to fill it, the core glass having a smaller specific gravity and larger refractive index than the cladding glass, and spinning the mold about its axis held horizontal while taking it through a thermal cycle to melt both the glasses and then cool them below their softening points.

3,853,522

METHOD AND APPARATUS OF CALIBRATING DRAWN GLASS TUBES

Franz Guenthner, Mainz-Mombach, Germany, assignor to JENAer Glaswerk Schott & Gen., Mainz, Germany

Filed June 15, 1973, Ser. No. 370,540
Claims priority, application Germany, June 15, 1972, 2229164
Int. Cl. C03b 17/04, 23/08
U.S. Cl. 65—87 10 Claims



1. A method of calibrating a length of tube comprising the steps of

a. drawing a continuous length of tube along its axis,

b. positioning forming elements around the length of tube with their axes parallel to the axis of the length of tube,

c. revolving the forming elements together around the axis of the length of tube,

d. adjusting the forming elements cooperatively, toward or away from the length of tube,

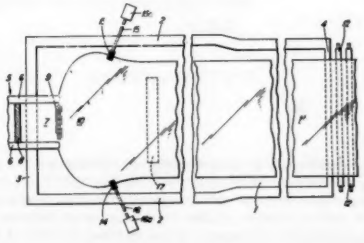
e. arranging the forming elements to define the required outer diameter of the length of tube.

3,853,523

MANUFACTURE OF FLAT GLASS

George Alfred Dickinson, St. Helens, and Frank Nixon, Billinge, both of England, assignors to Pilkington Brothers Limited, Liverpool, England

Filed June 15, 1972, Ser. No. 263,214
Claims priority, application Great Britain, July 9, 1971, 32454/71
Int. Cl. C03b 18/02
U.S. Cl. 65—99 A 5 Claims



1. In a method of manufacturing flat glass in ribbon form comprising the steps of delivering molten glass onto a bath of

molten metal to develop on the bath a layer of molten glass advancing at an initial speed, permitting the advancing layer of molten glass to spread laterally on the bath to attain a first thickness; cooling the glass as it is advanced toward a discharge end of the bath; and, utilizing discharge traction forces applied to the advancing glass adjacent the discharge end of the bath, discharging the advancing glass at a discharge speed greater than said initial speed and at a discharge thickness less than the first thickness; the improvement for increasing the rate of manufacture of said glass comprising:

mechanically applying to the lateral margins of said spread molten glass layer inwardly and forwardly directed forces, which inwardly and forwardly directed forces applied to such spread molten glass layer are applied so as to tend to resist thinning of the glass by

a. enforcing upon the glass a controlled reduction in width while

b. enforcing upon the glass an accelerated advancement to a speed less than the discharge speed;

said enforced controlled reduction in width of the forwardly flowing ribbon of glass being sufficient to establish a glass thickness thereafter reduced to said discharge thickness; said inwardly and forwardly directed forces being applied while the glass downstream of the application of said inward and forward forces undergoes a further acceleration to said discharge speed in response to said application of discharge forces at said discharge end, to reduce the glass thickness to said discharge thickness.

3,853,524

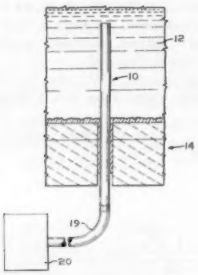
BUBBLER FOR A GLASS MELTING FURNACE

Ronald L. Schwenninger, Cumberland, Md., assignor to PPG Industries Inc., Pittsburgh, Pa.

Filed Feb. 14, 1974, Ser. No. 442,524

Int. Cl. C03b *5/18*

U.S. Cl. 65—178 **2 Claims**



1. In a bubbler of the type mounted in refractories of a glass melting furnace wherein a portion of the bubbler is to be submerged in a pool of molten glass to be contained in the furnace and a portion of the bubbler extends beyond the refractories to provide access to the bubbler to move a fluid through a passageway in the bubbler into the molten glass, the improvement which comprises:

a monolithic molybdenum tube having a passageway; and

a molybdenum disilicide coating on the outer surfaces of said molybdenum tube.

3,853,525

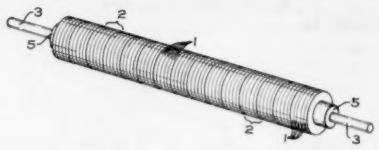
GLASS SHEET CONVEYING AND SUPPORTING ROLLS, AND APPARATUS EMPLOYING SUCH ROLLS

Harold R. Gorman, 829 Fifth St., Oakmont, Pa. 15139

Filed Aug. 2, 1973, Ser. No. 385,018

Int. Cl. C03b *35/00*

U.S. Cl. 65—181 **8 Claims**



1. A roll, useful in glass manufacturing and especially adapted for supporting and conveying at elevated temperature flat glass sheeting, said roll having an asbestos surface with a coating of boron nitride adhered thereto.

3,853,526

HIGH TEMPERATURE ROLLER WITH HIGH SILICA FABRIC SLEEVE

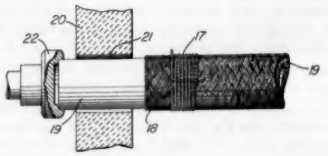
Paul Hochart, La Celle St. Cloud, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

Division of Ser. No. 549,041, May 10, 1966,. This application Oct. 13, 1972, Ser. No. 297,345

Claims priority, application France, June 24, 1965, 65.22102

Int. Cl. C03b *27/00*

U.S. Cl. 65—253 **6 Claims**



1. A roller for the transportation of hot glass sheets at softening temperatures which comprises a rigid, refractory cylindrical core and a seamless surface consisting essentially of a compressible fabric sleeve that consists essentially of silica fibers which do not become dehydrated or degraded at the temperature of use.

3,853,527

PARTICLE COLLECTING APPARATUS

John Stanley Andrews, Barry, England, assignor to H. H. Robertson Company, Pittsburgh, Pa.

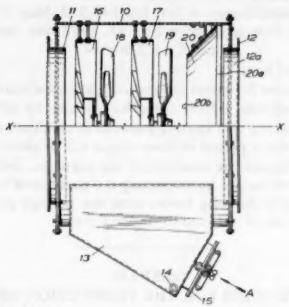
Filed Aug. 22, 1972, Ser. No. 282,724

Int. Cl. B01d *45/00*

U.S. Cl. 55—403 **4 Claims**

1. Apparatus for separating particulate matter from a moving gas stream including a casing having an inlet opening and an outlet opening; the said casing having a longitudinal axis passing through the said inlet opening and said outlet opening; a grouping of fixed radial vanes disposed about the said axis and between the said inlet opening and the said outlet opening, said vanes being arranged to impart a swirl to the said gas stream in a given direction as it passes through the said casing; an impeller which is freely rotatable about the said axis and located between the said grouping and the said outlet opening, said impeller having blades arranged to be rotated by the said moving gas stream in the direction of the swirl imparted to said gas stream by the vanes of the said grouping, and thereby

to impart a radial velocity component to the said gas stream; means in the bottom of said casing for collecting particulate matter which is removed from the said gas stream; and a second grouping of fixed radial vanes disposed about the said



axis and between the first said impeller and the said outlet opening, the vanes of the said second grouping being arranged to impart a swirl to the said gas stream in a direction opposite to that imparted by the vanes of the first said grouping.

3,853,528

SLOT NOZZLE FOR ISOTOPE SEPARATION OF GASEOUS COMPOUNDS

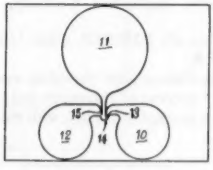
Goetz Werner Wodrich; Gerhard Heckh, and Manfred Zerweckh, all of Karlsruhe, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 8, 1971, Ser. No. 113,173

Claims priority, application Germany, Feb. 27, 1970, 2009265

Int. Cl. B01d *50/20*

U.S. Cl. 55—434 **4 Claims**



1. A slot nozzle for isotope separation of a gaseous compound, comprising:

a plurality of thin foils each including means defining a plurality of identically configured openings therethrough each having at least three interconnected lobes,

said foils superposed to form a stack with said openings arranged in complete congruity with said lobes defining a gas supply channel, a light isotope carry-off channel and a heavy isotope carry-off channel, and

said opening defining means for each of said openings including a nozzle having a deflection wall between said supply channel lobe and said heavy isotope carry-off channel lobe, and a peeler extending adjacent said deflection wall to separate the heavy isotopes from the light isotopes as the former tend to cling to the deflection wall in passing through said nozzle.

3,853,529

PLEATED AIR FILTER CARTRIDGE

Clyde O. Boothe, Rolling Hills Estates; Robert M. Culbert, Manhattan Beach, and Richard S. Farr, Los Angeles, all of Calif., assignors to Farr Company, El Segundo, Calif.

Filed June 9, 1971, Ser. No. 151,455

Int. Cl. B01d *27/06*

U.S. Cl. 55—499 **11 Claims**

1. A disposable filter cartridge for mounting an air inlet duct, comprising:

a frame for mounting in the air inlet duct;

a filter panel mounted on said frame and extending thereacross, said panel including a flexible sheet of pleated filtering material and a corresponding pleated support web adhesively joined to said filtering material;

said web including a plurality of spaced sinuous wire supports and a plurality of spaced straight wire supports connected to said sinuous wire supports and forming plurality of apertures therebetween;

said sinuous wire supports extending across said pleats of said filtering material and coinciding therewith to provide lateral support thereto and said straight wire supports extending along said pleats of said filtering material and transversing said sinuous wire supports to provide longitudinal support thereto; and

said straight wire supports positioned between said filtering material and said sinuous wire supports (at said connection therewith) whereby said more rigid sinuous wire supports maintain said less rigid sinuous wire supports in position against said filtering material.

3,853,530

REGULATING PLANTS WITH N-PHOSPHONOMETHYLGLYCINE AND DERIVATIVES THEREOF

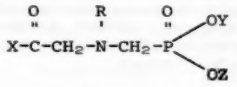
John E. Franz, Crestwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 123,057, March 10, 1971, abandoned. This application Feb. 3, 1972, Ser. No. 223,351

Int. Cl. A01n , *9/36*

U.S. Cl. 71—76 **35 Claims**

1. A method of regulating the natural growth and development of plants which comprises applying to said plants an effective, plant-regulating, non-lethal amount of a compound selected from those having the formula



wherein:

R is selected from the group consisting of hydrogen, formyl, acetyl, benzoyl, nitrobenzoyl and chlorinated benzoyl;

Y and Z are each independently selected from the group consisting of hydrogen and lower alkyl;

X is selected from the group consisting of hydroxy, alkoxy and chloroalkoxy of up to 12 carbon atoms, lower alkenoxy and cyclohexyloxy;

and certain salts thereof, which salts are selected from the group consisting of the Group I and II metals having an atomic number up to 30, hydrochloride, pyridine, ammonium, lower

aliphatic hydrocarbon amine, lower alkanol amine and aniline.

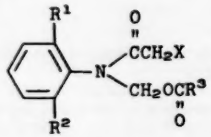
3,853,531

PLANT REGULATION WITH 2-HALO-2',6'-DIALKYL-N-CYL-OXYMETHYL-ACETANILIDES

Kenneth Wayne Ratts, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed June 21, 1972, Ser. No. 265,072
Int. Cl. A01n *5/00*
U.S. Cl. 71—76 **8 Claims**

1. A method of retarding the natural growth of desirable plants which comprises applying to said plants an effective, nonlethal, amount of a compound selected from those having the formula



wherein:
R^1 and R^2 are independently methyl or ethyl;
R^3 is methyl, ethyl or cyclopropyl; and
X is bromo or chloro.

3,853,532

ALIPHATIC MONOKETONES AS TOBACCO PLANT SUCKER GROWTH CONTROL AGENTS

Burton Maxwell Rein, East Brunswick, and Benjamin Weinstein, Morganville, both of N.J., assignors to Mobile Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 133,366, April 12, 1971, abandoned, which is a continuation-in-part of Ser. No. 95,322, Dec. 4, 1970, abandoned. This application July 21, 1972, Ser. No. 273,901
Int. Cl. A01n *9/24*
U.S. Cl. 71—78 **10 Claims**

1. A method for controlling the axillary growth known as suckers between a tobacco plant leaf and stalk which comprises contacting said plant with an amount, sufficient to inhibit sucker development, of a composition comprising a substantially non-volatile $C_4 - C_{18}$ saturated aliphatic hydrocarbon monoketone.

3,853,533

METHOD FOR FACILITATING THE HARVEST OF FRUIT

Milton C. Archer, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Nov. 19, 1973, Ser. No. 417,340
Int. Cl. A01n *9/18*
U.S. Cl. 71—104 **10 Claims**

1. A method for facilitating the harvest of fruit which comprises applying an effective concentration of *p*-isothiocyanatophenylacetic acid to fruit bearing trees within 2 weeks of the date of harvest.

3,853,534

METHOD FOR FACILITATING THE HARVEST OF FRUIT

Milton C. Archer, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 21, 1973, Ser. No. 427,179
Int. Cl. A01n *9/18*
U.S. Cl. 71—104 **10 Claims**

1. A method for facilitating the harvest of fruit which comprises applying an effective concentration of p-cyanophenylisothiocyanate to fruit bearing trees within about 2 weeks of the date of harvest.

3,853,535

PROCESS FOR THE COMMINUTION OF PARTICULATE ALLUMINACEOUS MATERIALS

Katalin Szabo nee Mogyorosi, Tatabanya; Janos Banhidy, Budapest; Ferenc Lazar, Tatabanya, and Miklos Ormossy, Budapest, all of Hungary, assignors to Tatabanyai Szenbanyak, Talabanya, Hungary

Continuation-in-part of Ser. No. 143,973, May 17, 1971, abandoned. This application Dec. 14, 1973, Ser. No. 424,643
Int. Cl. C22b *1/14*
U.S. Cl. 75—1 **7 Claims**

1. A process for comminution of particulate aluminaceous starting materials, which comprises before or after coarse crushing soaking said starting material in an alkaline or acidic electrolyte for a period of from about 0.2 to about 24 hours thereby to loosen the structure of the particles, and completing the comminution by subjecting the particulate material to predominantly shearing forces until the average particle size of the material is reduced to under 1 mm.

3,853,536

PROCESS FOR THE PRODUCTION OF IRON-CONTAINING TITANIFEROUS PARTICLES

Jozef Kazimierz Tylko, Faringdon, England, assignor to British Titan Limited, Billingham, Teesside, England

Filed Oct. 19, 1973, Ser. No. 407,810
Claims priority, application Great Britain, Nov. 29, 1972, 55049/72
Int. Cl. C22b *1/24, 5/10*
U.S. Cl. 75—3 **25 Claims**

1. A process for the treatment of an iron-containing titaniferous material comprising coating the material in particulate form with a reducing substance in such a manner as to provide a free-flowing coated particulate material having an average particle size not greater than 500μfeeding the coated particles through a hot gaseous plasma forming an inert or reducing atmosphere and thereafter recovering from the product a material containing an increased proportion of titanium.

3,853,537

SINTERING ALLOY

Fritz Thummler, Kaiserstrasse 12, Karlsruhe, and Mahmoud Ahmed, Masr el Gadid, Pforzheim, both of Germany

Filed Dec. 16, 1971, Ser. No. 98,965
Claims priority, application Germany, Dec. 20, 1970, 1963860
Int. Cl. B22f *9/00;* **C22c** *33/02*
U.S. Cl. 75—.5 R **3 Claims**

1. A sintering alloy powder consisting essentially of
about 2 to 13 percent of chromium and
about 0.5 to 5 percent of copper, with the balance iron and impurities.

3,853,538

USE OF REDUCING GAS BY COAL GASIFICATION FOR DIRECT IRON ORE REDUCTION

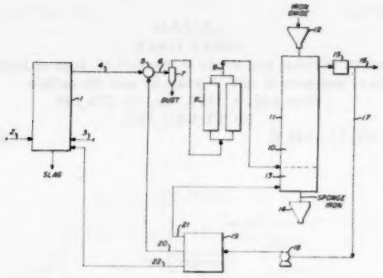
Edward J. Nemeth, Mount Lebanon Township, Allegheny County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed July 20, 1973, Ser. No. 381,103
Int. Cl. C21b *13/00*
U.S. Cl. 75—35 **7 Claims**

1. Process for reducing iron ore comprising:
a. gasifying solid fossil fuel at a temperature of at least 2,000° F to obtain a reducing gas containing at least about 80 percent hydrogen and carbon monoxide, and a molten slag,
b. mixing said reducing gas with a CO_2-lean tail gas from a reducing furnace in a volume ratio of from 40:60 to 60:40 to reduce the temperature of the mixture to less than 2,000° F,

c. removing sulfur compounds from the mixture thus obtained,

d. passing the desulfurized mixture thus obtained into a reducing furnace for the reduction of iron oxide,



e. removing CO_2 from at least a portion of the tail gas from said reducing furnace, and

f. passing at least a portion of the CO_2-lean tail gas thus produced to be mixed with said reducing gas, prior to removing the sulfur therefrom.

3,853,539

METHOD FOR CONTROLLING THE BLAST FURNACE CONDITION

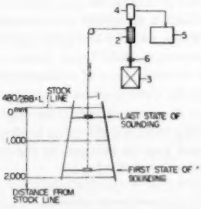
Michiyasu Yoshiki; Masanobu Ogata; Takashi Yokoi, and Yoichi Murakami, all of Kitakyushu, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Mar. 2, 1973, Ser. No. 337,690

Claims priority, application Japan, Mar. 15, 1972, 47-27016; Oct. 14, 1972, 47-103011

Int. Cl. C21b *5/00*

U.S. Cl. 75—41 **3 Claims**



1. A method for measuring information during operation of a blast furnace, which comprises detecting blast pressure at a desired position in the blast furnace, recording the detected blast furnace pressure continuously on a strip chart, measuring fluctuation length of recorded blast pressure from the strip chart within a predetermined period of time thereby digitally expressing fluctuation of said blast pressure, determining a first furnace condition index by dividing said fluctuation length by the length of measured strip chart corresponding thereto, and applying said furnace condition index to judge the condition of the blast furnace and promote highly stabilized operation.

3,853,540

DESULFURIZATION OF VACUUM-INDUCTION-FURNACE-MELTED ALLOYS

Rene Schlatter, Derry Township; James P. Stroup, Ligonier Township, both of Westermoreland County, Pa., assignors to Latrobe Steel Company, Latrobe, Pa.

Filed Apr. 11, 1973, Ser. No. 349,999

Int. Cl. C21c *7/02*; **C22b** *9/10*

U.S. Cl. 75—53 **10 Claims**

1. The method of desulfurizing an alloy of the group consisting of nickel-base, cobalt-base and iron-base alloys in a basic-lined vacuum vessel under reduced pressure comprising bringing the molten alloy into contact under reducing conditions with a basic slag having a temperature no higher than that of the alloy, the slag being formed by adding to the alloy a slag-forming mixture comprising lime having a calcium oxide content greater than about 98 percent and a neutral fluxing agent capable of rendering slag fluid and reactive at relatively low slag temperatures, in amount between about 5 percent and about 25 percent of the mixture by weight.

3,853,541

METHOD FOR PRODUCING ALUMINUM METAL DIRECTLY FROM ORE

Donald F. Othmer, 333 Jay St., Brooklyn, N.Y. 11201

Continuation-in-part of Ser. No. 103,765, Jan. 4, 1971,. This application Nov. 20, 1972, Ser. No. 308,059

Int. Cl. C22b *21/00*

U.S. Cl. 75—68 B **25 Claims**

1. A process for producing aluminum from an aluminum subhalide having a molecular weight below 107 comprising:

a. passing said aluminum subhalide in a gas stream at a high temperature between 1,100°and 1,800°C into direct contact with a coolant liquid in dispersed flow, said coolant liquid containing a substantial amount of the normal aluminum halide corresponding to said aluminum subhalide;

b. flash cooling within not more than 5 seconds, by means of said coolant liquid in dispersed flow, said gas stream from said high temperature between 1100°and 1800°C to a low temperature, below 1,000°C; whereby

c. said aluminum subhalide disproportions to give aluminum metal and said corresponding normal aluminum halide; and

d. separating by physical means said corresponding normal aluminum halide and said aluminum metal.

3,853,542

PROCESS FOR PROMOTING REACTIVITY OF ALUMINUM

Thomas J. Kondis, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 8, 1973, Ser. No. 321,688

Int. Cl. C22b *21/00*

U.S. Cl. 75—68 **2 Claims**

1. A process for promoting reactivity of particulate aluminum which comprises milling particulate aluminum in the presence of a reaction promoter selected from the group consisting of titanium glycolate and zirconium octoate.

3,853,543

PROCESS FOR PRODUCING ELEMENTAL COPPER BY REACTING MOLTEN CUPROUS CHLORIDE WITH ZINC

Harold K. Thomas, 3445 N. Valencia Ln., Phoenix, Ariz. 85018

Continuation-in-part of Ser. No. 322,868, Jan. 11, 1973, abandoned. This application Jan. 4, 1974, Ser. No. 430,619

Int. Cl. C22b *15/00*

U.S. Cl. 75—72 **2 Claims**

1. A method for processing a copper-bearing material, such as copper scraps and copper concentrates, to produce elemental copper, said process comprising:

a. reacting said copper-bearing material with a ferric chloride leach reagent solution to convert the copper values therein to cuprous chloride, yielding a pregnant leach liquor comprising a solution of said cuprous chloride and spent-leach-reagent ferrous chloride;
b. separating said cuprous chloride and ferrous chloride from said pregnant leach liquor by evaporation thereof, yielding a solid residue comprising said curpous chloride and said ferrous chloride;
c. separating said ferrous chloride from said solid residue by washing with water to solubilize said ferrous chloride, leaving a solid residue comprising said cuprous chloride;
d. regenerating said spent-leach-reagent ferrous chloride by oxidation thereof to form regenerated-leach-reagent ferric chloride;
e. recycling said regenerated-leach-reagent ferric chloride to the leaching step of step (a);
f. melting said solid cuprous chloride;
g. reducing the molten cuprous chloride of step (f) by reacting it with zinc while maintaining the temperature of the reaction mixture above about 1,100°C. to produce vaporized zinc chloride and molten elemental copper;
h. separating said zinc chloride vapors from said molten elemental copper product;
i. reacting said zinc chloride with elemental aluminium to yield elemental zinc and a vaporized aluminum chloride reaction product;
j. separating said vaporized aluminum chloride from said elemental zinc;
k. recycling said elemental zinc to the cuprous chloride reduction step of step (g); and
l. treating the aluminium chloride reaction product of step (i) to recover an aluminum product therefrom.

3,853,544
CORROSION RESISTANT STEELS HAVING IMPROVED WELDABILITY

Tadashi Nishi; Tuneyasu Watanabe; Haruo Shimada; Hiroki Masumoto; Takeshi Fujimoto; Kazuhiro Miida, and Takashi Okazaki, all of Kitakyushushi, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. Nos. 2,695, Jan. 14, 1970, Pat. No. 3,733,195, and Ser. No. 237,215, March 22, 1972, abandoned, which is a division of Ser. No. 2,695,. This application July 5, 1972, Ser. No. 269,084

Int. Cl. C22c *39/54, 39/20*

U.S. Cl. 75—125 **1 Claim**

1. A corrosion resistant steel having improved weldability consisting of 0.001 – 0.25 percent by weight of carbon, 0.70 – 1.1 percent by weight of silicon, 0.3 – 2.0 percent by weight of manganese, 0.5 – 2.0 percent by weight of chromium, 0.1 – 1.5 percent by weight of molybdenum, 0.1 – 0.29 percent by weight of copper, less than 0.04 percent by weight of phosphorus, and two or more elements selected from the group consisting of arsenic, tin, beryllium, bismuth, lead, germanium, antimony, selenium and tellurium in an amount of 0.02 – 0.20 percent by weight each, the balance being iron and unavoidable impurities.

3,853,545
CAST ALLOY FOR VALVE SEAT INSERT

Kunio Kusaka, Yokohama; Tomio Sekine, Kawasaki; Makoto Osawa, Tokyo; Yoshitoshi Hagiwara, Niiza, and Yoshiaki Takagi, Kawagoe, all of Japan, assignors to Tokushu Seiko Co., Ltd., Kawasaki and Honda R&D Co., Ltd., both of Wako, Japan

Filed Mar. 26, 1973, Ser. No. 344,583

Claims priority, application Japan, May 29, 1972, 47-064493

Int. Cl. C22c *39/20*

U.S. Cl. 75—128 A **2 Claims**

1. A high-efficiency alloy for a valve seat insert of excellent durability, consisting essentially of in weight ratio 0.80 to 2.50 % of C, 0.20 to 3.0 % of Si, 0.10 to 5.0 % of Mn, 0.03 to 0.50 % of P, 0.02 to 0.30 % of S, 13.0 to 28.0 % of Ni, 10.0 to 30.0 % of Cr, 0.1 to 5.0 % of Mo, 0.02 to 0.20 % of N, 5.0 to 15.0 % of W, 5.0 to 15.0 % of Co, and the remaining part consisting of iron and a slight amount of impurities.

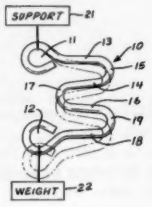
3,853,546
FORCE GAGE

Frank D. Werner, and Roger D. Bloomfield, both of Jackson, Wyo., assignors to said Werner, by said Bloomfield

Filed Aug. 9, 1972, Ser. No. 279,189

Int. Cl. G01l *1/06*

U.S. Cl. 73—141 R **6 Claims**



1. A gage combination for determining the amount of force applied to the gage, comprising a first leg member and a second leg member which are spaced apart, third and fourth leg members connecting said first and second leg members and positioned between said first and second leg members, said third and fourth leg members being joined together adjacent first ends thereof, and opposite ends of said third and fourth leg members being joined to the first and second leg members, respectively, means to apply force to said first and second leg members at locations spaced from the junctions of said first and second leg members to said third and fourth leg members, respectively, to tend to cause separation of said first and second leg members, said force being in a range which causes permanent deformation of at least portions of said leg members whereby the deformation of said portions of said leg members indicates the amount of force applied to said gage, and means providing indicia calibrated to directly indicate the force applied to said gage in relation to the amount of separation of said leg members.

3,853,547
BRAZING MATERIALS

Ogle R. Singleton, Jr., Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Filed May 25, 1973, Ser. No. 363,910

Int. Cl. C22c *21/00*

U.S. Cl. 75—147 **7 Claims**

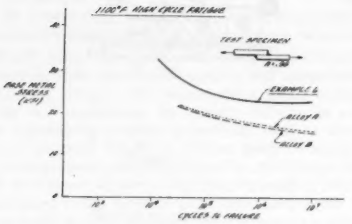
1. An improved brazing composition effective for joining aluminum alloy components by vacuum brazing consisting essentially of aluminum, about 7 to 14% silicon, about 0.2 to 2% magnesium and about .02 to 0.20% bismuth, by weight, with minor elements and impurities in amounts up to about 1% iron, 0.2% copper, 0.25% manganese, 0.6% each in the case of zinc and titanium, others not exceeding 0.05% each and 0.15% total.

3,853,548

NI-AU BASE BRAZING ALLOY

Norman P. Fairbanks, Cincinnati, Ohio; Raymond P. Barb, Saugus, and William Sutar, Boston, both of Mass., assignors to General Electric Company, Cincinnati, Ohio

Filed Feb. 25, 1974, Ser. No. 445,120
Int. Cl. C22c *19/00*
U.S. Cl. 75—171 4 Claims



1. An improved nickel-base brazing alloy consisting essentially of, by weight, 14–25% Au, 1–5% Si, 1–4% B, 2–12% Cr, 1–5% Fe, up to about 17% Pd, with the balance Ni and incidental impurities with up to about 50% of the Ni replaceable by Co.

3,853,549

HIGH ENERGY ABSORPTION-POROUS BERYLLIUM MADE BY PLASMA CONSOLIDATION

Robert J. Baird, and Thomas A. Taylor, both of Indianapolis, Ind., assignors to Union Carbide Corporation, New York, N.Y.

Filed Apr. 28, 1972, Ser. No. 248,652
Int. Cl. B22f *3/10*; C22c *1/08*; B22f *3/24*; C23c *7/00*; C22c *25/00*
U.S. Cl. 75—208 R 11 Claims

3,853,550

METHOD FOR FABRICATING BIMETALLIC MEMBERS OF THERMOELEMENTS BY SINTERING POWDERED COMPACTS IN THE PRESENCE OF GRAPHITE

Jury Diomidovich Nikolaev, Nova-Basmannaya ulitsa, 31, kv. 22; Sergei Nikolaevich Ljuskin, prospekt Mira, 179, kv. 43; Vladimir Ivanovich Koletvinov, Argunovskaya ulitsa, 4, kv. 61, and Alexandra Semenovna Pavlenko, ulitsa Bakuninskaya, 18, kv. 8, all of Moscow, U.S.S.R.

Filed Jan. 4, 1973, Ser. No. 320,936
Int. Cl. B22f *1/00*
U.S. Cl. 75—213 2 Claims

1. A method for fabricating bimetallic members of thermoelements from ingots of alloys based on a solid solution of Bi_2Te_3 – Sb_2Te_3, comprising crushing said ingots to fines, pressing said fines in briquettes similar in shape to the bimetallic members of the thermoelements, and annealing said briquettes in air in a thick-walled metal vessel with a powdered graphite medium.

3,853,551

METHOD OF SINTERING IRON, COPPER TIN ALLOYS FOLLOWED BY SLOW COOLING

Friedrich J. Esper, Leonberg, and Robert Zeller, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed June 26, 1972, Ser. No. 266,443
Claims priority, application Germany, Aug. 26, 1971, 2142708
Int. Cl. B22f *1/00*
U.S. Cl. 75—227 3 Claims

1. The process of making a sintered shaped body comprising forming a pulverulent mixture of 0.5 to 3% tin, 2 to 14% copper, balance iron, the ratio of tin to copper being between 1:2 and 1:9; subjecting the said mixture to sintering in the desired shape; and immediately after said sintering, cooling the shaped body at a speed of 15°C/min to a temperature between about 520 and 750°C followed by chilling.

3,853,552

METHOD OF FIXING A TONER BY HEATING IN ELECTROPHOTOGRAPHIC DUPLICATION

Ryochi Namika, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1972, Ser. No. 310,155
Claims priority, application Japan, Dec. 3, 1971, 46-98059
Int. Cl. G03g *13/20*
U.S. Cl. 96—1 R 10 Claims

1. A method of fixing a toner by heating in electrographic duplication comprising the steps of passing a sheet of recording paper between a pair of heating rollers, said sheet of recording paper having a toner adhering to one surface thereof and coming into contact with one of said rollers, while heating the toner to a temperature in a range from its secondary transition point to its melting point so as to fix the toner on the recording paper, the temperature of said toner not being raised to the fluid zone, said one roller having a surface subject to pick-up of toner by offset.

3,853,553

METHOD FOR IMAGE TRANSFER USING PERSISTENT INTERNAL POLARIZATION

Tsuyoshi Yasuie, Izumiotsu-shi, Osaka-fu, and Kuniki Seino, Amagaski-shi, Hyogo-ken, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 24, 1969, Ser. No. 879,407
Claims priority, application Japan, Dec. 14, 1968, 43-91330
Int. Cl. G03g *13/22*
U.S. Cl. 96—1 R 5 Claims

1. An electronic photographing method for a photosensitive plate of the type wherein a photoconductive layer having a persistent internal polarization characteristic is interposed between an electrically insulating layer and an electrically conductive layer, comprising the steps of:
   1. exposing an original image onto said photoconductive layer and simultaneously charging said electrically insulating layer by a DC. corona discharge to form an image by persistent internal polarization of said photoconductive layer according to the light portion of said original image and an electrostatic image on said electrically insulating layer by the difference of surface electric potential produced in accordance with the light and dark patterns of said original image,
   2. applying an AC. corona discharge to the dark pattern of said electrically insulating layer thereby leaving an electric charge only on said electrically insulating layer corresponding to the light portion of the light image, and
   3. uniformly irradiating said photosensitive plate to reduce the surface electric potential of the dark pattern of electrically insulating layer to zero potential and the surface electric potential of said light pattern of said electrically insulating layer to a high potential.

3,853,554
PROCESS FOR LIQUID DEVELOPMENT OF ELECTRONIC PHOTOGRAPHY

Isamu Maki, and Masashi Kiuchi, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 19, 1972, Ser. No. 273,167

Claims priority, application Japan, July 24, 1971, 46-55463; July 24, 1971, 46-55464; July 30, 1971, 46-57305; July 30, 1971, 46-57306

Int. Cl. G03g *13/10*

U.S. Cl. 96—1 LY **8 Claims**

1. In a method for developing electrical latent images wherein an electrical image is produced on a photoelectroconductive or an insulating layer, a liquid developer is applied to the layer to visualize the image, and then the visualized image is transferred to a transfer material, the improvement wherein the liquid developer comprises a coloring agent, a cyclic rubber and polyethylene having a molecular weight from about 1,000 to 5,000, said components being dispersed in an electrically insulating liquid having an electrical resistance of more than 10^{10} ohm-cm and a specific dielectric constant of less than 3.

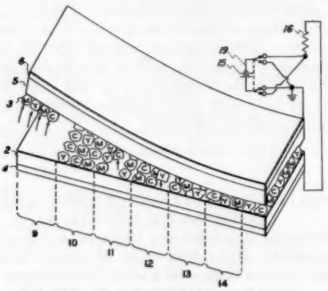
3,853,555
METHOD OF COLOR IMAGING A LAYER OF ELECTRICALLY PHOTOSENSITIVE AGGLOMERATES

Gedeminas J. Reinis, Penfield, and Kyler F. Nelson, Pittsford, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 28, 1972, Ser. No. 310,040

Int. Cl. G03g *5/00, 13/00, 17/00*

U.S. Cl. 96—1.2 **15 Claims**



1. A method of imaging comprising:

a. providing an imaging mono-layer sandwiched between a donor and a receiver member, at least one of said donor and receiver members being at least partially transparent to electromagnetic radiation to which said imaging layer is sensitive, said mono-layer comprising a plurality of randomly mixed electrically photosensitive agglomerates of at least two different colors with correspondingly different spectral sensitivities to electromagnetic radiation, each individual agglomerate of said plurality being removable from said mono-layer independently of the other monolayer agglomerates;

b. maintaining first electrical field across said imaging layer;

c. modifying said first electrical field wherein said modification involves reducing, grounding or reversing the potential across said imaging layer;

d. substantially restoring said first electrical field to a constant potential;

e. exposing said mono-layer to a pattern of electromagnetic radiation to which at least one of said agglomerates are sensitive while applying said restored electric field across said imaging mono-layer, said electric field being held at a substantially constant potential during said exposure; and

f. during the application of said restores field, separating said receiver member from said donor member whereby exposed individual agglomerates are removed from said mono-layer in imagewise configuration by selective adhesion to at least one of said donor and receiver members while the non-exposed individual agglomerates adhere to the other forming a colored image.

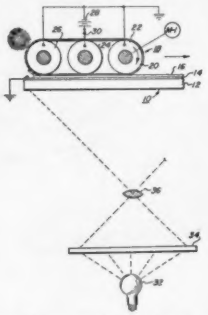
3,853,556
METHOD FOR ELIMINATING ELECTRICAL ARCING DURING PHOTOELECTROPHORETIC IMAGING

Gerard T. Severynse, Fairport, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 821,255, May 2, 1969, Pat. No. 3,697,408. This application Apr. 13, 1972, Ser. No. 243,880

Int. Cl. G03g *13/00, 17/00*

U.S. Cl. 96—1.3 **2 Claims**



1. A method for eliminating electrical arcing during imaging of an photoelectrophoretic imaging suspension in an apparatus comprising a first transparent conductive electrode for supporting a layer of an imaging suspension; a flexible electrically insulating web formed of a material having a resistivity greater than about 10^7 ohm-cm; contacting support means for contacting said web and the imaging suspension; separation support means for guiding said web away from the imaging suspension, said support means being positioned to cause said web to remain in contact with the layer of imaging suspension from said contacting support means to said separation support means; a second electrode for applying an electrical field across said web and the imaging suspension in a contact zone; exposure means for exposing the imaging suspension to an image through said first transparent conductive electrode; and means for coupling said first and second electrodes to an electrical potential source, comprising the steps of:

a. moving said web in rolling contact over said first transparent conductive electrode thereby causing said contact zone to move across said first transparent conductive electrode;

b. positioning said second electrode between said contacting and separation support means;

c. maintaining said contacting and said separation support means at approximately the same potential and polarity as said first transparent conductive electrode; and

d. applying an electrical field limitedly across said web and the imaging suspension in said contact zone between said contacting and separation support means such that electrical arcing at the line of contact and separation of said web and the imaging suspension is eliminated.

3,853,557
PHOTOGRAPHIC DIFFUSION TRANSFER ELEMENT

Henry J. Fassbender, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 26, 1970, Ser. No. 5,565

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 R **10 Claims**

1. A light-sensitive photographic element comprising a support, a first silver precipitating agent on the support, a

water soluble light-sensitive silver halide emulsion layer provided over said precipitating agent and being capable of being removed from said element by aqueous washing without removing said first precipitating agent, and a temporary, removable second silver precipitating agent which is water premeable and coated over said emulsion layer, said first silver precipitating agent, said silver halide emulsion layer, and said second precipitating agent all being on the same support.

3,853,558

PRODUCTION OF COPPERIZED ETCHED ALUMINUM PRINTING PLATES

Lowell Koenig, Evanston, and Albert Presco, Berkeley, both of Ill., assignors to Alden Press, Inc., Elk Grove Village, Ill.

Filed Feb. 9, 1973, Ser. No. 330,966
Int. Cl. G03f 7/02
U.S. Cl. 96—33 **10 Claims**

1. In a method for making copperized, deep-etched aluminum printing plates for use in offset printing, wherein grained aluminum plates are coated with a light-sensitive compound, exposed to light, developed, etched, and copperized with a copperizing solution, the improvement which comprises effecting said copperizing by initially rubbing an essentially fresh copperizing solution at generally ambient temperature on said aforesaid treated aluminum plates, draining off and recovering excess copperizing solution, providing a previously used or drained off and recovered copperizing solution at a temperature in the range of not substantially below 85°F but below the flash point of organic solvent present in said copperizing solution, and rubbing said initially copperized plate at least one or more times with such drained off and recovered heated copperizing solution until said plate has been copperized to the desired extent.

3,853,559

PHOTOGRAPHIC MATERIAL UTILIZING AN AROMATIC HYDROXY COMPOUND AND A 2-NITRO-PHENYL-ALDEHYDE

Steven Levinos, Summit, and William Neithardt, Jr., Ridgefield, both of N.J., assignors to Keuffel & Esser Company, Morristown, N.J.

Filed Aug. 20, 1973, Ser. No. 390,149
Int. Cl. G03c 1/68
U.S. Cl. 96—35 **9 Claims**

1. Imaging material comprising a support and a coating thereon of a composition comprising:
   a. a tannable hydrophilic colloid;
   b. an aromatic hydroxy compound; and
   c. a light-sensitive 2'-nitro-phenyl-aldehyde.

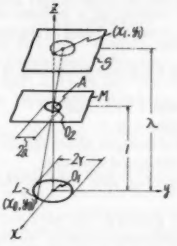
3,853,560

METHOD OF MAKING AN ELECTRON SENSITIVE MOSAIC COLOR SCREEN

Akio Ohgoshi, Tokyo, and Takuji Inoue, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed July 9, 1971, Ser. No. 161,085
Claims priority, application Japan, July 11, 1970, 45-60737
Int. Cl. G03c 5/00
U.S. Cl. 96—36.1 **4 Claims**

1. In the manufacture of a color screen for a color picture tube having a shadow mask with apertures therein, the method which includes:
   depositing a layer of photoresist material of the positive type over the face of the tube;
   mounting a shadow mask having apertures of the same diameter as the shadow mask of the finished tube in spaced relation in front of said face of said tube;
   irradiating light on said layer through said apertures of said mask, successively rotating the source of said light about the different apparent color centers of the tube, the radius of gyration being such as to form an annulus of light, and
   wherein the radius r of gyration is selected as $r > \lambda/\lambda - 1\ a$;
   wherein λ is the ratio of the light source-to-face plate spacing to the light source-to-mask spacing and a is the radius of said apertures,
   thereafter developing the photoreist layer to remove the portions thereof where the annulus of light fell;
   coating a graphite solution over the entire area of the face of said tube including the remaining portions of the photoresist layer;
   irradiating the opposite face of the face plate of said tube by light to sensitize the said remaining portions of said photoresist layer and the portions of the graphite layer overlying the said remaining portions of the photoresist layer, thereafter developing said remaining portions of said photorersist to remove it with the graphite layer overlying thereof; and



   coating the regions of the face plate not now comered by the graphite layer with phosphor slurry of desired colors to form a mosaic of multi-colored groupings on the face of said tube.

3,853,561

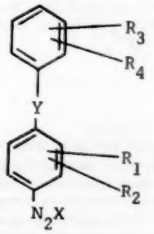
PROCESS FOR THE PREPARATION OF SCREEN PRINTING STENCILS USING INTERMEDIATE SUPPORT FOR LIGHT SENSITIVE LAYER

Maximilian Karl Reichel, Wiesbaden-Biebrich; Hans Ruckert, Wiesbaden-Schierstein, and Walter Urban, Wiesbaden, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt Main, Germany

Continuation of Ser. No. 201,539, Nov. 23, 1971, abandoned. This application Aug. 29, 1973, Ser. No. 393,233
Claims priority, application Germany, Nov. 26, 1970, 2058178
Int. Cl. G03f 7/12
U.S. Cl. 96—36.4 **11 Claims**

1. A process for the preparation of screen printing stencils which comprises the following steps in the following order
   a. providing a sheet-like intermediate support with a layer comprising at least one cross-linkable binder capable of swelling in water or soluble in water and at least one condensable aromatic diazonium salt of the general formula

I



wherein
R_1, R_2, R_3 and R_4 are the same or different and are selected from the group consisting of hydrogen, halogen, alkyl groups with 1 or 2 carbon atoms, and alkoxy groups with 1 to 4 carbon atoms,

Y is selected from the group consisting of a single bond and the groups —O—, —S—, —NH—, and —CONH—, and
X is the anion of the diazonium salt,

or a diazo amino compound derived from said diazonium salt,

b. drying said layer,

c. pressing the layer side of the light-sensitive material thus produced upon a screen-printing support and moistening said light-sensitive layer, before or after pressing on said screen material, with a solution of at least one aldehyde or at least one compound of the general formula

$$A(-CH_{3-n}Z_n)_m$$

wherein

A is a m-valent radical of a primary or secondary acid amide, the free valences being at the amide N atom, or of a phenol,

Z is selected from the group consisting of a halogen atom or an OH group,

n is an integer from 1 to 3, and

m is an integer from 1 to 5

and wherein Z is a halogen atom when *n* is greater than 1,

d. drying the laminated element,

e. imagewise exposing said light-sensitive layer under a master, and

f. developing the exposed light-sensitive layer with water, wherein the unexposed areas of the layer are removed,

said intermediate support being stripped from said light-sensitive layer before development.

3,853,562

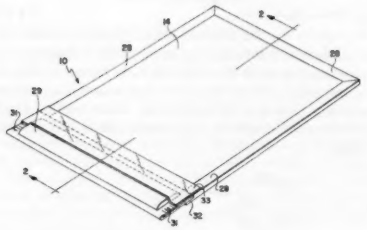
CONTAINER FOR DIFFUSION TRANSFER FILMS WITH WHITENING AGENT CONTAINING PROCESSING SOLUTION

Edwin H. Land, Cambridge, and Stanley M. Bloom, Waban, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 247,048, April 24, 1974, Pat. No. 3,802,881. This application Sept. 24, 1973, Ser. No. 400,134

Int. Cl. G03c *1/48, 5/30*

U.S. Cl. 96—76 C **9 Claims**



1. A rupturable container for use in diffusion transfer film units adapted to provide color transfer images viewable by reflected light, said rupturable container releasably holding an aqueous alkaline processing composition comprising a viscosity-increasing reagent, a light-reflecting agent and a non-fluorescent optical whitening reagent capable of absorbing visible light within a predetermined wavelength range, said whitening reagent being substantially uniformly dispersed in said composition in a concentration such that a layer of the composition approximately 0.0025 inch thick has an optical reflection density not exceeding about 0.04 density units.

3,853,563

PHOTOGRAPHIC WATER-INSOLUBLE ANTIHALATION COATING

Henri Depoorter, Mortsel, and Felix Jan Moelants, Wilrijk, both of Belgium, assignors to AGFA-Gevaert, Mortsel, Belgium

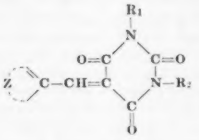
Filed May 29, 1973, Ser. No. 364,326

Claims priority, application Great Britain, June 22, 1972, 29388/72

Int. Cl. G03c *1/84*

U.S. Cl. 96—84 R **4 Claims**

1. A light-sensitive photographic element comprising a support and at least one light-sensitive silver halide emulsion layer wherein the side of the support, opposite to that carrying the said silver halide emulsion layer(s) is provided with an antihalation layer of a water-insoluble, alkali-soluble polymeric binder and a dye corresponding to the formula:



wherein the dyestuff molecule contains at least one carboxyl group and is free from sulpho group in acid or salt form, and wherein

each of R_1 and R_2 stands for hydrogen, and alkyl group, an allyl group, a cycloalkyl group or an aryl group, and

Z represents the atoms necessary to close a pyrrole nucleus.

3,853,564

GRAPHIC AID AND METHODS RELATED THERETO

Elton N. Baker, Elgin, Ill., assignor to Fotel Inc., Villa Park, Ill.

Division of Ser. No. 36,979, May 13, 1970, Pat. No. 3,657,983. This application Mar. 1, 1972, Ser. No. 230,866

Int. Cl. G03c *5/04*

U.S. Cl. 96—41 **12 Claims**

1. A method of producing master grid layout sheets on a light sensitive material having a known gamma up to a predetermined light saturation level, said sheets including a pattern of gray monotone effects comprising the steps of

a. exposing said light sensitive material through a desired pattern to represent said pattern of gray monotone effects, said material being exposed to light such that said pattern is substantially uniformly exposed to an amount of light substantially less than said saturation level,

b. placing said light sensitive material in a developing fluid to develop said exposed areas,

c. terminating said developing step when said gray monotone areas have a predetermined optical density,

d. fixing said sensitive material to prevent any further development thereof, and

e. said predetermined optical density being sufficient to be visible in the sheet but having a sufficiently low optical density that said pattern will not be present when said sheet is subsequently photographically reproduced.

3,853,565

SILVER HALIDE PHOTOGRAPHIC SUPERSENSITISING DYE COMBINATION

Elvin Frederick William Thurston, and John Gabriel Valentine Scott, both of Ilford, England, assignors to Ilford Limited, Ilford, Essex, England

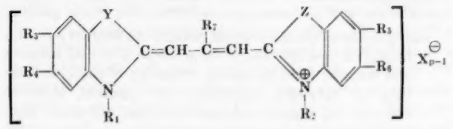
Filed Apr. 18, 1973, Ser. No. 352,483

Claims priority, application Great Britain, Apr. 26, 1972, 19409/72

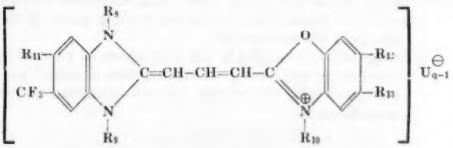
Int. Cl. G03c *1/14*

U.S. Cl. 96—124 **6 Claims**

1. A photographic silver halide material which comprises a super-sensitising combination which consists essentially of a sensitising dye of the formula



wherein R_1 and R_2 are each alkyl groups, or a group A-Q where A is a straight or branched alkylene chain containing 1–6 carbon atoms and Q is an amide, carboxylic acid or sulphonic acid group, R_3, R_4, R_5 and R_6 are the same or different and each represents a hydrogen or halogen atom, or an alkyl, aryl, hydroxy or alkoxy group, R_7 is a lower alkyl group, Y and Z are each sulphur or selenium atoms or one of Y and Z is an oxygen atom the other being a sulphur or selenium atom, X is an anion and p is 1 in the case of a betaine-like molecular structure caused by the presence of a sulphonic acid in either or both R_1 and R_2 or by the presence of a carboxylic acid in both R_1 and R_2 and p is 2 in the case of a non-betaine-like molecular structure, together with a sensitising dye of the formula



wherein R_8 is an alkyl group, R_9 and R_{10} are each an alkyl group or one is an alkyl group and the other is a group A-Q where A is a straight or branched alkylene chain containing 1–6 carbon atoms and Q is an amide carboxylic acid or sulphonic acid group, R_{11} is a hydrogen or halogen atom, or an alkyl or cyano group R_{12} is a hydrogen atom or a lower alkyl group, R_{13} is a hydrogen atom or is a lower alkyl group or an aryl group which optionally is substituted, U is an anion and q is 1 in the case of a betaine-like molecular structure caused by the presence of a sulphonic acid group in Q and 9 is 2 in the case of a non-betaine-like molecular structure.

3,853,566

HOT PRESSED SILICON CARBIDE

Svante Prochazka, Ballston Lake, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 21, 1972, Ser. No. 317,426

Int. Cl. C04b *35/14*

U.S. Cl. 106—44 **3 Claims**

1. A dense hot pressed silicon carbide ceramic body consisting essentially of β-silicon carbide and a boron containing additive selected from the group consisting of boron and boron carbide wherein the amount of the boron additive is equivalent to 0.5–3.0 parts by weight of boron per 100 parts of silicon carbide, said boron additive being in solid solution with the silicon carbide, the ceramic being substantially pore free and having a density of at least 98% of the theoretical density for silicon carbide and a fine-grained microstructure.

3,853,567

PRODUCTION OF SHAPED ARTICLES OF HOMOGENEOUS MIXTURES OF SILICON CARBIDE AND NITRIDE

Wolfgang Verbeek, Krefeld, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Apr. 2, 1973, Ser. No. 347,585

Claims priority, application Germany, Apr. 19, 1972, 2218960

Int. Cl. C04b *35/56, 35/58*

U.S. Cl. 106—44 **9 Claims**

1. A process for producing shaped forms comprising homogeneous mixtures of silicon carbide and silicon nitride, which comprises pyrolyzing at a temperature of about 200° to 800°C a silazane to produce a fusible carbosilazane resin, shaping said carbosilazane resin into predetermined form, and heating said shaped form of carbosilazane resin to about 800° to 2,000°C in an inert atmosphere, thereby to convert the carbosilazane to silicon carbide and silicon nitride.

3,853,568

GLASSES WITH HIGH CONTENT OF SILVER OXIDE

Theodor L. Chvatal, Vienna, Austria, assignor to Owens-Illinois, Inc., Toledo, Ohio

Division of Ser. No. 142,336, May 11, 1971, Pat. No. 3,798,114. This application Aug. 3, 1972, Ser. No. 277,803

Int. Cl. C03c *3/12, 3/14, 13/00*

U.S. Cl. 106—47 R **19 Claims**

1. A glass composition consisting essentially of the following components, expressed in weight percent of the total oxides in the compositions, selected from the group consisting of:

A. silver oxide 20–70%, 10 to 70% of an oxide of a transitional metal selected from the group consisting of tungsten, uranium and manganese and 10 to 70% of an oxide of a metalloid selected from the group consisting of boron, phosphorous, germanium, arsenic, antimony, bismuth and tellurium;

B. silver oxide 20–70% and 30 to 80% of a two-component mixture of oxides of a metalloid selected from the group consisting of boron, phosphorous, germanium, arsenic, antimony, bismuth and tellurium, and

C. silver oxide 20–70%, to 10 to 70% of molybdenum oxide or vanadium oxide and 10 to 70% of an oxide of a metalloid selected from the group consisting of boron, germanium, arsenic, antimony, bismuth and tellurium.

3,853,569

SILICATE GLASS FIBER COMPOSITIONS

Bernard Laurent, Paris, and Claude Haslay, Creil, both of France, assignors to Compagnie de Saint-Gobain, Neuilly sur Seine, France

Continuation-in-part of Ser. No. 341,417, Jan. 30, 1964, abandoned. This application July 1, 1970, Ser. No. 51,672

Claims priority, application France, Feb. 7, 1963, 63.924011

Int. Cl. C03c *3/08, 3/30, 13/00*

U.S. Cl. 106—50 **2 Claims**

1. A glass having the composition by weight percent:

SiO_2	63.90
Fe_2O_3	0.30
Al_2O_3	2.95
CaO	7.35
MgO	3.10
BaO	2.50
Na_2O	14.10
K_2O	0.80
B_2O_3	5.00

3,853,570

CEMENT COMPOSITION

Victor Nonis, Roundtree Mills Rd., and Italo Nonis, 4 Tothill Rd., both of Etobicoke, Ontario, Canada

Filed Nov. 27, 1972, Ser. No. 309,743
Int. Cl. C04b *7/02*
U.S. Cl. 106—97 **4 Claims**

1. A dry cement composition which comprises 15 to 35 percent by volume of marble dust fines, 25 to 45 percent by volume of dolomite aggregate, the remainder being white Portland cement.

3,853,571

FIRE RESISTANT COMPOSITION CONTAINING GYPSUM AND SILICATE-BASED MATERIAL AND PROCESSS FOR MAKING SAME

Lawrence F. Gelbman, 86 Hamilton Ave., Yonkers, N.Y. 10705

Filed Oct. 5, 1972, Ser. No. 295,170
Int. Cl. C04b *7/00, 11/00*
U.S. Cl. 106—105 **4 Claims**

1. A fire-resistant composition suitable for use in construction materials such as wallboard, insulation, soundproofing, fireproofing, furnace lining and building products or the like and exhibiting increased strength and structural integrity when subjected to temperatures in excess of 400° F. up to 2,000° F. consisting essentially of 1 part, by volume, gypsum, and 1 to 22 parts, by volume, of a silicate-based synthetic lightweight aggregate material having a bulk density of 1.4 to 6 pounds per cubic foot and comprising a heat-expanded mixture of anhydrous sodium silicate, liquid sodium silicate and a heat-triggered neutralizer material.

3,853,572

POWDER METAL MIX CONTAINING CARBONACEOUS BINDER AND GREEN COMPACTS MADE THEREFROM

Robert H. Herron, and William J. Smothers, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Feb. 28, 1972, Ser. No. 229,987
Int. Cl. C08h *13/00, 17/12, 17/08*
U.S. Cl. 106—284 **23 Claims**

1. A powder metal mix suitable for processing into both a green compact characterized by improved green strength and a sintered powder metal compact, said powder metal mix consisting of about 99.5 percent to about 90 percent of an iron powder metal mix, said iron powder mix consisting of about 70 percent to about 95 percent iron powder and the remainder at least one addition agent taken from the group consisting of silicon carbide, mullite, carbon black, graphite, nickel, molybdenum and titanium, and about 0.5 percent to about 10 percent of at least one carbonaceous addition agent taken from the group consisting of coal tar pitch and petroleum tar pitch, which carbonaceous addition agent has a softening temperature between about 55° C. to about 120° C., a quinoline insoluble percent of about 2 to about 20 and a coking value-Conradson percent of about 30 to about 60, said carbonaceous addition agent being a fugitive binder in the green compact when present in amounts of about 0.5 percent to about 4 percent and a precursor of carbon remaining in the sintered powder metal compact made therefrom when present in amounts of about 4 percent to about 10 percent.

3,853,573

FLUXING AGENT MODIFIED PIGMENTARY COMPOSITIONS

Thomas Howard Ferrigno, 29 Clover Hill Cir., Trenton, N.J. 08638

Continuation-in-part of Ser. No. 306,936, Nov. 15, 1972. This application July 5, 1973, Ser. No. 376,460
Int. Cl. C09c *1/28*
U.S. Cl. 106—288 B **19 Claims**

1. A pigmentary composition comprising calcined agglomerates consisting essentially of the following constituents in parts by weight:

Anhydrous Silicate Mineral	from	30	to	98.5
Hydrous Silicate Mineral	from	0	to	40.0
Inorganic Colorant	from	0	to	5.0
White Opacity Modifier	from	0	to	20.0
Inorganic Binder	from	1	to	10.0
Fluxing Agent	from	0.5	to	10.0

said anhydrous silicate mineral being in the form of particles having an average size of from about 2 to 100 microns and selected from the group consisting of silica, the silicates of berylium, magnesium and calcium, alumino-silicates, the alumino-silicates of lithium, berylium, magnesium, barium, sodium, potassium and calcium and mixtures thereof;

said hydrous silicates being in the form of particles having an average size of from about 0.5 to 100 microns and selected from the group consisting of phyllosilicates, sorosilicates, opal, the zeolite group of tectosilicates, the amphibole group of inosilicates, perlite, non-swelling montmorillonites and mixtures thereof;

said inorganic colorant is selected from the group consisting of iron oxide, maganese oxide, lead chromate, ultramarine and ceramic colorants;

said white opacity modifier is selected from the group consisting of titanium dioxide, zirconium oxide, zirconium silicate, zirconium double silicates, zinc oxide, antimony oxide and tin oxide;

said inorganic binder is selected from the group consisting of water soluble silicates, sodium polyphosphates, expanding lattice montmorillonites and mixtures thereof;

said fluxing agent is selected from the group consisting of metal oxides and glassy metal oxide complexes which melt at a temperature below the melting point of the anhydrous silicate mineral;

said agglomerates ranging in size from about 20 microns to 1 centimeter and having a specific gravity at least 5 percent lower than that of the minerals contained in the composition.

3,853,574

PROCESSING MODIFIED PIGMENTARY COMPOSITIONS

Thomas Howard Ferrigno, 29 Clover Hill Cir., Trenton, N.J. 08638

Continuation-in-part of Ser. No. 306,926, Nov. 15, 1972,. This application July 5, 1973, Ser. No. 376,461
Int. Cl. C09c *1/28*
U.S. Cl. 106—288 B **13 Claims**

1. A pigmentary composition comprising calcined agglomerates consisting essentially of the following in parts by weight

Anhydrous Silicate Mineral	from 40 to 89
Hydrous Silicate Mineral	from 10 to 50
Inorganic Binder	from 1 to 10

said inorganic binder being selected from the group consisting of sodium polyphosphates, expanding lattice montmorillonite and soluble silicates of sodium, potassium and lithium, said anhydrous silicate minerals being in the form of particles having an average size in the range of from 2 to 20 microns and said hydrous silicate minerals being in the form of particles having an average size in the range of from 1.5 to 20 microns, said agglomerates ranging in size from about 20

microns to one centimeter and having a specific gravity at least 5 percent below that of the minerals contained therein.

3,853,575

SUBSTANTIALLY NON-GREYING TITANIUM DIOXIDE PIGMENTS FOR USE IN RESIN COMPOSITIONS

Bernd Holle, and Gerhard Winter, both of Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 24, 1973, Ser. No. 326,204

Claims priority, application Germany, Feb. 12, 1972, 2206776; Feb. 12, 1972, 2206775; Feb. 12, 1972, 2206772

Int. Cl. C09c *1/36*

U.S. Cl. 106—300 **11 Claims**

1. A process for the production of a substantially non-greying titanium dioxide pigment coated with a layer of aluminum oxide aquate, comprising drying at about 25° to 200°C a suspension of a titanium dioxide pigment in a solution of a basic aluminum salt, said solution being selected from the group consisting of (a) a solution of basic aluminum chloride containing an oxidizing salt, (b) a solution of basic aluminum nitrate, and (c) mixtures thereof, the basic aluminum salt being present in said solution in such amount that the dried titanium dioxide pigment contains about 0.5 to about 10% by weight of aluminum oxide aquate (calculated as Al_2O_3), and the nitrate and oxidizing salts being present in such amount in the solution that their anions are present in the titanium dioxide pigment to the extent of about 0.05 to 3% by weight.

3,853,576

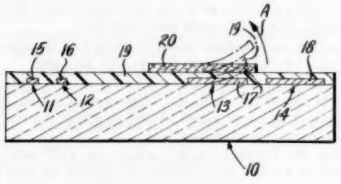
PRODUCTION OF WINDOWED FACE PLATES

Raymond G. Netznik, c/o Suburban Screen Print, Inc., 3535 Commercial Ave., Northbrook, Ill. 60062

Filed Apr. 20, 1973, Ser. No. 352,957

Int. Cl. B44d *1/52*

U.S. Cl. 117—5.5 **9 Claims**



1. A method for the production of a windowed face plate comprising applying to selected portions of the surface on one side of a transparent face plate a poorly adherent coating and drying the same to provide easily strippable film portions lightly adhered to said plate, overcoating the same side of said plate with a heavily pigmented organic solvent-based paint and drying the same to form an opaque brittle film of paint which adheres strongly to the exposed surface of said face plate and said strippable film portions to provide an opaque plate, applying an adhesive tape to the portion of said paint which overlies a film portion which it is desired to remove and then peeling off said adhesive tape to lift off the paint overlying said film portion together with the strippable film portion attached thereto to thereby provide one or more windows in said opaque plate.

3,853,577

METHOD FOR PREPARING DECORATIVE LAYER

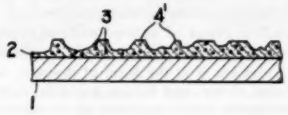
Hiroshi Nishida, Kashiba-machi; Satoshi Tanaka, Nishinomiya; Akiyoshi Hatanaka, Ibaragi; Akira Yoneyama, Amagasaki, and Masafumi Yamanishi, Takarazuka, all of Japan, assignors to The Bonntile Co., Ltd., Tokyo and Dai Nippon Toryo Co., Ltd., Osaka-shi, Osaka-fu, both of, Japan, part interest to each

Filed Jan. 5, 1973, Ser. No. 321,340

Claims priority, application Japan, Jan. 13, 1972, 47-6051

Int. Cl. B44c *1/20*; **E04c** *1/00*

U.S. Cl. 117—8 **7 Claims**



1. A method of preparing a decorative layer, which comprises:

spray-coating a first coating under a pressure of **5 – 8** kg/cm² of a mortar composition containing **3 – 50** weight percent of an epoxy resin and an epoxy hardener, **5 – 70** weight percent cement, **5 – 70** weight percent of an aggregate powder and **5 – 30** weight percent water and having a viscosity in the range of **100 – 500** poise at **25°C** onto the surface of a base;

spray coating a second coating of said mortar composition under a pressure of **2 – 5** kg/cm² so as to form a concavo-convex surface pattern;

pressing the top of the convex portions of the surface while in a semi-hardened condition which occurs from **0.5 – 6** hours after the application of said second coating, to form flat areas on the tops of the convex portions; and

finish-coating the surface with a synthetic resin, enamel or lacquer.

3,853,578

METHOD OF MANUFACTURING DECORATIVE BOARDS WITH DEPRESSION PATTERNS

Masaru Suzuki, Yashio, and Kenichi Yamazaki, Tokyo, both of Japan, assignors to Senri Kikaku Sogo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 8, 1972, Ser. No. 287,532

Int. Cl. B44d *1/50*, *1/52*; **C08f** *3/50*

U.S. Cl. 117—8.5 **17 Claims**

1. A method of manufacturing a depression patterned decorative board comprising applying an ultraviolet-curable unsaturated polyester resin to a surface of a printed or colored base board, covering the coated surface with a shading film formed of a phototransmissible material and having thereon a shading pattern corresponding to a depression pattern to be formed in the coating layer of the aforesaid resin, said film being adhesive to the resin in its incured state but strippable from the cured resin irradiating the coating layer by ultraviolet rays through the said film thereby to cure the resin in the exposed areas and peeling off the said film from the coated layer whereby at least a portion but not all of the unexposed resin is removed with the film thereby providing a depressioned-patterned decorative board having a depression pattern in the polyester surface coating thereof corresponding to the pattern of the shading film.

3,853,579
COATINGS CONTAINING PLASTIC POLYMERIC PIGMENTS

Edward J. Heiser, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 732,100, May 27, 1968, Pat. No. 3,779,800. This application July 3, 1972, Ser. No. 268,897The portion of the term of this patent subsequent to Sept. 27, 1983, has been disclaimed.

Int. Cl. D21h *1/32, 1/10*

U.S. Cl. 117—15 **21 Claims**

1. A coated paper having printing applied to a surface thereof comprising

A. a paper substrate having intimately adhered thereto;

B. an improved coating comprising a binding amount of a binder and an opacifying amount of a pigment, provided that (1) the ratio of binder to pigment is in the range from about 1.3 to about 12 volume parts of binder to about 38.8 volume parts of pigment; and (2) at least a portion of said pigment is in the form of discrete, substantially spheriodal, water- and binder-insoluble, non-film forming, polymeric plastic particles of an organic polymer, said particles having an average diameter of from about 0.3 to about 0.8 micron, said portion of plastic particles constituting at least about 1 volume percent based on total pigment and being sufficient to impart improved coating properties as compared to a coating containing only inorganic pigment, said organic polymer being a polymer of

a. monovinylidene aromatic monomer;

b. less than about 45 weight percent of copolymerizable monomer selected from the group consisting of conjugated aliphatic diene, alkyl acrylates, unsaturated esters of saturated carboxylic acids, esters and half esters of α,β-ethylenically unsaturated polycarboxylic acids, aliphatic monoolefins, vinyl fluoride, vinylidene chloride and vinylidene fluoride and

c. not greater than 25 weight percent of α,β-ethylenically unsaturated carboxylic acid; and

C. printing applied to said coating.

3,853,580
METHODS FOR ELECTROGASDYNAMIC COATING

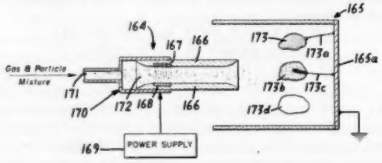
Meredith C. Gourdine, East Orange, N.J., assignor to The National State Bank, Elizabeth, N.J.

Division of Ser. No. 837,562, June 30, 1969, Pat. No. 3,673,463, which is a division of Ser. No. 601,270, Nov. 15, 1966, abandoned, which is a continuation-in-part of Ser. No. 512,083, Dec. 7, 1965, abandoned. This application Apr. 18, 1972, Ser. No. 245,132

Claims priority, application Japan, Apr. 21, 1971, 46-25242

Int. Cl. B05b *5/02*

U.S. Cl. 117—17 **14 Claims**



1. A method of applying a fixed coating to a substrate, including the steps of:

flowing a gas in a bounded flow path,

including in the gas a coating substance,

establishing an ionizing field between at least two electrodes at an upstream location in said bounded flow path, thereby subjecting the gas to said ionizing field to provide charged particles of the coating substance,

forcing the gas and entrained charged particles of the coating substance downstream through a portion of the bounded flow path to an exit from the bounded flow path,

emitting the charged particles out of the bounded flow path by said exit to a location less constricted than the bounded flow path, thereby creating, in the vicinity of the exit, a space charge field at an electrogasdynamically increased potential and separated from the charging electrodes by said portion of flow path,

continuing to force gas entrained charged particles through the bounded flow path portion and out of said exit in opposition to said space charge field, and

disposing the surface of the substrate to be coated beyond said exit so as to be contacted by said particles,

said step of forcing the gas and entrained charged particles through a bounded flow path portion comprising flowing the gas and charged particles along a path portion sufficiently long to permit an electrogasdynamic potential increase to a very high potential without incurring dielectric breakdown.

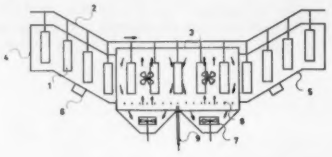
3,853,581
METHOD OF COATING ARTICLES WITH ELECTROSTATICALLY CHARGED PARTICLES

Pierre Fabre, Grenoble, France, assignor to Air Industrie, S.A., Courhevoie, France

Filed June 2, 1972, Ser. No. 259,000

Int. Cl. B05b *5/02;* **B44d** *1/095*

U.S. Cl. 117—17 **4 Claims**



1. A method of coating articles with electrostatically charged particles comprising the steps of

maintaining an inert gaseous atmosphere within a chamber, said atmosphere being under a pressure at least as great as the ambient atmospheric pressure,

introducing solid organic particles into said chamber,

forming a suspension of said particles within said chamber by continuously circulating and agitating said gaseous atmosphere and said particles,

electrostatically charging said particles in said suspension, passing articles through said chamber,

depositing said charged particles upon said articles to form a layer of charged particles on said articles,

withdrawing said particle-coated articles from said chamber while supplying additional solid organic particles to said chamber at a rate equal to that at which the coated articles leave said chamber, and

heating the particle-coated articles to melt said particle layer to form a thin continuous coating on said articles.

3,853,582
METALLIZED ISOTROPIC BORON NITRIDE BODY AND METHOD FOR MAKING SAME

William H. Labossier, Billerica, and Hartmut Schilling, Watertown, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 8,053, Feb. 2, 1970, abandoned. This application Jan. 13, 1972, Ser. No. 217,656

Int. Cl. B44d *1/00*

U.S. Cl. 117—22 **3 Claims**

1. A method for metallizing the surface of an isotropic boron nitride body comprising the steps of:

removing the surface contaminants from the boron nitride body by vaporizing said contaminants;

coating a surface of the clean boron nitride body with a composition comprising powders selected from at least one of the group consisting of zirconium hydride, tita-

nium hydride, and hafnium hydride; five to twelve percent by weight of molybdenum powder; and the powders selected from at least one of the group consisting of nickel, platinum, copper, gold, and silver; and

heating said body in a non-reactive atmosphere within a temperature range from about 1000°C to about 1500°C.

3,853,583
FLUORESCENT WHITENING COMPOSITIONS

Theodore A. Langstroth, 5959 Rhode Island Ave., Cincinnati, Ohio 45237, and Arthur S. Neave, Jr., 6775 Clippinger Dr., Indian Hill, Ohio 45243

Continuation-in-part of Ser. No. 133,341, April 12, 1971, Pat. No. 3,766,083. This application Mar. 19, 1973, Ser. No. 342,512

Int. Cl. B44d *1/12*; **D06b** *3/12*

U.S. Cl. 117—33.5 T **3 Claims**

1. A method of producing fluorescently whitened, resin-treated cotton which comprises contacting the resin-free fibers with an effective amount of a stable aqueous, fluorescent whitening composition which contains as the essential fluorescent whitening ingredient approximately 10 to 30 percent by weight of a dissolved tetra-alkali metal salt of 4,4'-bis(4-p-sulfoanilino-6-diisopropanolamino-s-triazin-2-ylamino)-2,2'-stilbenedisulfonic acid, and approximately 5 to 15 percent by weight of a co-solvent selected from the group consisting of polyhydric alcohols, diglycol ethers, polyethylene glycols of the formula $H(OCH_2CH_2)_nOH$, wherein n is an integer from 4 to 6, and alkanolamines of the formula $(HO\text{-}alk)_p\text{—}NR_{3-p}$ wherein alk is a bivalent alkane radical of 2 to 4 carbon atoms, R is hydrogen or alkyl of 1 to 2 carbon atoms, and p is an integer from 1 to 3 concomitantly with the application of the textile treating resin; and drying the fluorescently whitened and resin-treated fibers.

3,853,584
PROCESS FOR THE PREPARATION OF PHOTOGRAPHIC MATERIALS

Sumitaka Tatsuta; Wataru Ueno, both of Kanagawa; Nobuhiko Minagawa, and Hiroyuki Kurabayashi, both of Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 12, 1973, Ser. No. 331,948

Claims priority, application Japan, Feb. 14, 1972, 47-15347

Int. Cl. G03c *1/78*

U.S. Cl. 117—34 **8 Claims**

1. A process for the preparation of a photographic material which consists essentially of a combination in sequence of the steps of firstly forming a plurality of minute pores having a diameter and depth of from 0.1μ to 60μ in the surface of a polyetyrene support by roughening, secondly subjecting the roughened surface of the polystyrene support to flame-treatment, coating the resulting flame-treated surface of the polystyrene support with an emulsion or suspension containing gelatin, and drying the resulting coating.

3,853,585
PROCESS FOR THE PRODUCTION OF PHOTOGRAPHIC MATERIALS

Sumitaka Tatsuta, and Wataru Ueno, both of Minami Ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 22, 1973, Ser. No. 334,549

Claims priority, application Japan, Feb. 24, 1973, 48-19212

Int. Cl. G03c *1/78*

U.S. Cl. 117—34 **14 Claims**

1. A process for the production of a photographic material comprising a photographic layer coated on a polyolefin resin layer, which process comprises firstly roughening the surface of the polyolefin resin and then subjecting the thus roughened surface to a surface activation treatment to thereby render the surface of the polyolefin resin hydrophilic, thereafter coating the thus activated surface with a photographic layer comprising gelatin.

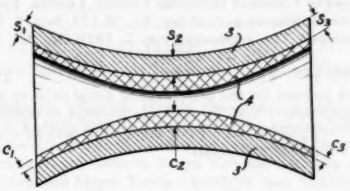
3,853,586
TAPERED CARBON/PYROLYTIC GRAPHITE COMPOSITE MATERIAL

Eugene L. Olcott, Falls Church, Va., assignor to Atlantic Research Corporation, Alexandria, Va.

Filed Oct. 4, 1968, Ser. No. 765,200

Int. Cl. B64d *33/04*

U.S. Cl. 117—37 R **6 Claims**



1. In a composite material of reduced residual stress an annular carbon substrate having an inner surface and a pyrolytic graphite coating vapor deposited onto said inner surface of said substrate, said composite carbon/pyrolytic graphite material having a center portion and two end portions arranged along a longitudinal axis, the improvement wherein the center portion of said composite material has a thickness normal to its inner surface which is greater than the thickness at at least one of said end portions, resulting in a taper from its center portion towards said at least one end.

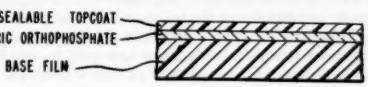
3,853,587
FERRIC PHOSPHATE COATED POLYMERIC SHAPED OBJECTS

Vernon C. Haskell, Jr., and James L. Hecht, both of Richmond, Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 273,301, July 19, 1972, , which is a continuation-in-part of Ser. No. 182,641, Sept. 22, 1971, abandoned. This application Dec. 18, 1972, Ser. No. 316,271

Int. Cl. B44d *1/092*; **B41m** *1/18*; **B05c** *5/00*; **B23b** *27/00*; **C04b** ; **C08h** ; **B32b** *9/04*

U.S. Cl. 117—46 FC **12 Claims**



1. An organic, polymeric shaped article having a substantially continuous, gas-impermeable coating on at least one surface thereof, the coating comprising ferric orthophosphate wherein the atom ratio of iron to phosphorus is about from 2.3 to 0.5.

3,853,588
VINYLIDENE CHLORIDE-TOPCOATED, ORTHOPHOSPHATE-COATED POLYMERIC OBJECTS

Vernon C. Haskell, and James L. Hecht, both of Richmond, Va., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. Nos. 273,301, July 19, 1972, Pat. No. 3,821,014, and Ser. No. 316,271, Dec. 18, 1972,. This application June 5, 1973, Ser. No. 367,343

Int. Cl. C01b *25/36*; **B32b** *27/06*

U.S. Cl. 117—46 FC **8 Claims**

1. In an article comprising an organic, polymeric shaped article having a substantially continuous gas-impermeable coating on at least one surface thereof of aluminum orthophosphate or iron orthophosphate, wherein the atom ratio of metal to phosphorus is from 2.3 to 0.5 the improvement which

consists in said coating having a topcoating of a vinylidene chloride polymer containing from about 2 to 30 weight percent of a polymeric epoxy resin.

3,853,589

METAL DEPOSITION PROCESS

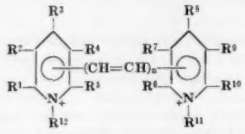
Timothy Douglas Andrews, Manningtree, England, assignor to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 88,173, Nov. 9, 1970, abandoned. This application Feb. 2, 1972, Ser. No. 222,991

Int. Cl. C23b *5/60, 3/02;* C23c *3/02*

U.S. Cl. 117—47 A 21 Claims

1. A process for the deposition of metal in or on substrate characterized in that the substrate contains or consists of, as active component, an organic compound derived from a cation of the general formula



where R^{1-12} are hydrogen, halogen or organic substituents and $n = 0$ or an integer, comprising contacting the substrate with an electroless plating solution.

3,853,590

ELECTROLESS PLATING SOLUTION AND PROCESS

Leon A. Kadison, Pasadena, and Eileen Maguire, San Gabriel, both of Calif., assignors to Crown City Plating Co., El Monte, Calif.

Filed Aug. 20, 1969, Ser. No. 851,762

Int. Cl. B44d *1/092;* C23c *3/02*

U.S. Cl. 117—47 A 12 Claims

1. In an electroless plating process, the steps of immersing an article having a catalytic noble metal on its surface in a first electroless plating solution to initiate deposition of the plating metal on the article, removing the article when a thin coating of plating metal has been deposited on the surface of the article, and immersing the article in a second electroless plating solution containing a plating metal electrolessly platable with respect to the plating metal deposited by said first electroless plating solution and having a concentration of an inhibitor which is sufficient to prevent deposition of said plating metal on an article having the catalytic noble metallic surface but does not prevent deposition of said plating metal on an article having the thin coating of plating metal.

3,853,591

PHOSPHATE COATED POLYMERIC SHAPED OBJECTS

Vernon C. Haskell, Richmond, Va.; Larry L. Hench, Gainesville, Fla., and Paul C. Yates, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 273,301, July 19, 1972, , which is a continuation-in-part of Ser. No. 182,641, Sept. 22, 1971, abandoned. This application Feb. 7, 1973, Ser. No. 330,389

Int. Cl. C01b *25/36;* B32b *27/06*

U.S. Cl. 117—47 A 6 Claims

1. In an organic, polymeric shaped article having a substantially continuous, gas-impermeable coating on at least one surface thereof, comprising metal orthophosphate wherein the metal is aluminum or iron and the atom ratio of metal to phosphorus is about from 2.3 to 0.5, the improvement wherein up to about 50 percent of the metal ions is replaced by tin, titanium, or zirconium ions.

3,853,592

HIGHLY STABLE RESIN COATED PAPER PRODUCTS AND METHOD FOR MAKING SAME

Irvin H. Crawford, Hamlin; Roger E. Democh, and Robert J. Baron, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 98,055, Dec. 14, 1970, Pat. No. 3,755,069. This application Apr. 4, 1973, Ser. No. 347,750

Int. Cl. B32b *27/10;* C08f *45/58*

U.S. Cl. 117—60 8 Claims

1. A high stability resin coated paper product comprising a paper substrate, an organic stabilizer additive layer applied to at least one surface of said substrate, and a polyolefin resin coated over said additive layer, said organic stabilizer additive being capable of migrating into said polyolefin resin to stabilize the latter under ambient conditions of normal use.

3,853,593

PROCESS FOR IMPROVING THE PROTECTIVE PROPERTIES OF CHROMIUM-OXIDE BASED COMPOUND COATINGS, BY MEANS OF STABILIZATION OF THE CHROMIUM ION

Giuseppe Baudo, Vicenza, and Giuseppe Bombara, Rome, both of Italy, assignors to Centro Sperimentale Metallurgico S.p.A., Rome, Italy

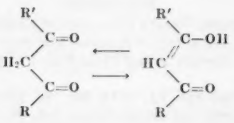
Filed July 10, 1972, Ser. No. 270,291

Claims priority, application Italy, July 31, 1971, 52042/71

Int. Cl. B44d *1/44*

U.S. Cl. 117—62 7 Claims

1. A process for improving the protecting properties of chromium oxide based coatings, comprising immersing a metal substrate having thereon a chromium oxide based coating, in an aqueous solution of 0.1 to 10 grams per liter of a beta-diketone of the formula



in which

R is a monovalent aromatic ring-containing radical and

R′ is a monovalent radical able to impoverish the electronic density of the enolic group

by inductive effect, at a temperature from 30° to 90°C., for 1 second to 15 minutes, with constant stirring, then rinsing the coated substrate in water and drying the surface of the coating.

3,853,594

METHOD FOR TREATING PAPER WITH MIXED THERMOPLASTIC AND THERMOSETTING ACRYLIC RESINS AND PRODUCTS THEREOF

Helmut Moroff, Trautheim near Darmstadt, and Helmut Neumann, Darmstadt-Eberstadt, both of Germany, assignors to Rohm GmbH, Darmstadt, Germany

Filed July 7, 1972, Ser. No. 269,615

Claims priority, application Germany, July 14, 1971, 2135072

Int. Cl. B44d *1/44*

U.S. Cl. 117—64 R 9 Claims

1. A method for making a glossy resin-filled paper which comprises contacting the paper to be treated with a filler-free

resin dispersion consisting essentially of (1) a thermoplastic acrylic resin and (2) a self-cross-linking acrylic resin, both dispersed in water, the ratio by weight of thermoplastic resin to self-linking resin in said dispersion being between about 1:1 and about 1:10, drying the treated paper, and then calendering the dried paper with a highly polished calender roll at a temperature between about 120°C. and about 180°C.

3,853,595

SEWING TAPE

James J. Pedginski, West St. Paul, and William A. Peper, Maplewood Village, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 7, 1972, Ser. No. 286,992

Int. Cl. C09j *7/02*

U.S. Cl. 117—68.5 **3 Claims**

1. A colored, matte-finished normally tacky and pressure-sensitive adhesive tape provided with repeating printed indicia at predetermined intervals and having particular utility in sewing procedures, comprising in combination:

a. a self-supporting medium to high density polyethylene film backing, having, at 7% elongation in the cross direction,

1. a tensile stress in the range of about 75 to 250 kg/cm² and

2. a thickness in the range of about 40 to 80 microns, such that the tensile force is in the range of about 400–2,000 gms/cm width;

b. coated on one surface of said backing a layer of normally tacky and pressure-sensitive adhesive which

1. is in the range of about 12 to 15 microns thick and

2. has a loss shear modulus of more than 10^6 dynes/cm², whereby the tape can be adhered firmly to fabric, stitched through rapidly using an electric sewing machine without gumming the needle, and completely and easily removed from a line of stitching which extends therethrough without loosening the stitches.

3,853,596

METHOD OF GROWING A SINGLE-CRYSTAL ON A SINGLE-CRYSTAL SEED

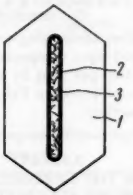
Grigory Issakovich Distler, ulitsa Vavilova, 48, kv. 211; Anatoly Nikolaevich Lobachev, ulitsa Fersmana, 3, kv. 68; Vasily Platonovich Vlasov, Flotskaya ulitsa, 13 korpus 1, kv. 214; Oleg Konstantinovich Melnikov, Leninsky prospekt, 92/2, kv. 64, and Nina Sergeevna Triodina, Universitetsky prospekt, 4, kv. 501, all of Moscow, U.S.S.R.

Filed July 7, 1972, Ser. No. 269,884

Claims priority, application U.S.S.R., July 7, 1971, 1670901

Int. Cl. B44d *1/16*

U.S. Cl. 117—69 **12 Claims**



1. A method of growing a single-crystal on a single-crystal seed comprising the steps of: depositing prior to the beginning of crystallization onto the surface to be overgrown, which constitutes at least one portion of said single-crystal seed, a layer of a material, said material having at least one of the characteristics of chemical composition or structure which differs from that of the material of said single-crystal seed, said layer on the one hand being capable of acquiring polarization properties under the influence of the material of the single-crystal seed which are retained during crystallization, and on the other hand being of a thickness such as to eliminate the defects of the surface of said single-crystal seed and to retain polarization properties acquired from said single-crystal seed; placing said single-crystal seed with said layer deposited thereon into a crystallization medium under conditions required for growing said single-crystal, and growing a single-crystal on the layer of the material covering said single-crystal seed.

3,853,597

PROCESS FOR FORMATION OF SHOCK ALLEVIATING COATING

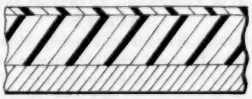
Shozo Shimizu, Okazaki; Hiroshi Shinohara; Junichi Asai, both of Toyota; Takashi Aiki, Yokohama; Kuniomi Hirota, Kamakura, and Toashi Kishi, Yokohama, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi Prefecture and Mitsui Toatsu Chemicals, Inc., Tokyo, both of, Japan

Filed July 20, 1972, Ser. No. 273,463

Claims priority, application Japan, Aug. 9, 1971, 46-59596

Int. Cl. B44d *1/14;* **B32b** *15/08*

U.S. Cl. 117—75 **2 Claims**



1. A process for the formation of a shock alleviating protective coating on a shaped article of metal or synthetic resin material which comprises preparing a two-part paint consisting of a first constituent consisting essentially of a urethane resin containing an excess of isocyanate groups and a second constituent consisting essentially of at least one diamine compound selected from the group consisting of hexamethylenediamine, phenylendiamine, 4,4′-diamino-diphenylmethane, 4,4′-diamino-diphenylsulfone, 4,4′-diamino-diphenylether, 4,4′-diamino-dicyclohexylmethane, 4,4′-diamino-dicyclohexylsulfone, and 4,4′-diamino-dicyclohexylether, and, with or without one or more resins other than the urethane resin, with the proviso that at least one of said constituents further contains an amount of an epoxy resin therein effective to promote formation of a shock alleviating protective coating, spraying said two-part paint directly on the surface of said article with a spraying means adapted for the spraying of such paint thereby providing a first layer on said surface, and then applying a weather-proof paint on said first layer thereby providing a second or a finishing layer on said first layer.

3,853,598

ADHESIVE TAPE

Roger C. Raguse, La Porte, Ind., assignor to Scholl, Inc., Chicago, Ill.

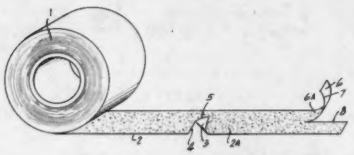
Continuation of Ser. No. 29,566, April 17, 1970, abandoned. This application Feb. 9, 1972, Ser. No. 224,920

Int. Cl. C09j *7/04*

U.S. Cl. 117—76 A **10 Claims**

10. A non-porous pressure-sensitive adhesive tape for general and surgical uses consisting of a high thread count woven cellulosic snythetic fiber backing in which the warp threads are parallel to each other, the weft threads are parallel to each other and perpendicular to the warp threads, the thread count being in the neighborhood of 180 warp threads and 54 weft threads per square inch, an acrylic polymer primer on one face of said backing, and a pressure-sensitive adhesive layer containing both natural and synthetic rubber applied directly over said primer, the primer fully covering the face of the

backing so as to prevent the adhesive layer contacting the backing when applied to the primer and to prevent moisture from passing from the backing to the adhesive, said tape being



easily hand tearable in a straight line in both transverse and longitudinal directions leaving clean and smooth unfrayed edges along the tear line.

3,853,599

PROCESS FOR ADHERING REINFORCING FIBERS AND RUBBER

Muraji Kamichika, Kawanishi; Yasuhiro Miyake, Takarazuka, and Fumihiro Doura, Kawachinagano, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 81,603, Oct. 16, 1970, abandoned. This application Dec. 4, 1972, Ser. No. 311,480

Int. Cl. B32b *25/10*

U.S. Cl. 117—76 T **33 Claims**

1. A process for adhering reinforcing fibers and rubber which comprises:

1. coating the fibers with an adhesive composition which consists essentially of an aqueous dispersion of a solid polymer containing (a) from 1.0 to 45 mole %, based on the total solids content in said aqueous dispersion, of monomer units of a halooxyalkylester of an unsaturated carboxylic acid of the formula:

$$RCO\text{-}O(C_nH_{2n}{\sim}_{m-p+}X_m)(OH)_p$$

wherein RCO represents the acid residual group of a polymerizble unsaturated carboxylic acid, X represents a halogen atom, *p* and *m* represent positive integers of 1 to 3 and *n* is a positive integer of 3 to 12, and (b) at least 40 mole %, based on the total solids content in said aqueous dispersion, of monomer units of a conjugated diolefin;

2. heating the coated fibers of step (1);

(3) treating the fibers of step (2) by contacting said fibers of step (2) with a second composition comprising (a) a phenolformaldehyde primary condensate and (b) a second dispersion of a copolymer of vinyl pyridine, styrene and butadiene;

4. heating the treated fibers of step (3);

5. applying said rupper to the heated fibers of step (4); and 6 vulcanizing said rubber.

3,853,600

IMPROVED CARBON FIBER REINFORCED COMPOSITE ARTICLE

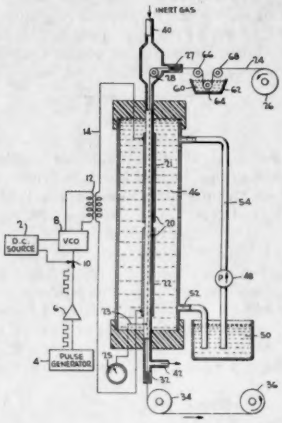
Kenneth C. Hou, Whippany, N.J., assignor to Celanese Corporation, New York, N.Y.

Division of Ser. No. 142,656, May 12, 1971, Pat. No. 3,762,941. This application Feb. 28, 1973, Ser. No. 336,868

Int. Cl. D06m *15/30*; **B44d** *1/14*

U.S. Cl. 117—76 T **9 Claims**

1. A composite article exhibiting enhanced interlaminar shear strength comprising a resinous matrix material derived from a thermosetting resin having incorporated therein a carbonaceous fibrous material containing at least 90 per cent carbon by weight which bears upon the surface of said carbonaceous fibrous material a compact coating of polyphenylene polymer having a thickness of about 25 to 800 angstrom units.



3,853,601

HYDROPHILIC MICROPOROUS FILM

Henry T. Taskier, Englewood, N.J., assignor to Celanese Corporation, New York, N.Y.

Filed Apr. 18, 1972, Ser. No. 245,260

Int. Cl. B32b *27/16*

U.S. Cl. 117—98 **8 Claims**

1. A hydrophilic microporous film comprising a hydrophobic microporous polymeric film characterized by having a reduced bulk density as compared to the bulk density of the corresponding precursor film, a crystallinity of about about 30 percent, an average pore size of about 100 to 12,000 Angstroms and a surface area of about 2 to about 200 square meters per gram coated with a surfactant comprising a silicon glycol copolymer which renders said hydrophobic film hydrophilic.

3,853,602

SLIDING MEMBER

Yoshikatsu Nakamura, Yokohama, Japan, assignor to Nippon Piston Ring Co., Ltd., Tokyo, Japan

Filed Dec. 4, 1972, Ser. No. 311,619

Claims priority, application Japan, Dec. 3, 1971, 46-97181

Int. Cl. F16c *33/12*; **C23c** *7/00*

U.S. Cl. 117—105 **2 Claims**

1. A sliding member comprising a scuff resistant and abrasion resistant sprayed layer composed of a ferrous alloy containing more than two per cent by weight but less than the stoichiometric amount based on FeS_2 of sulfur laminated on at least its sliding surface.

3,853,603

METHOD FOR THE CHROMIZING OF IRON OR FERROUS ALLOY ARTICLES

Mikio Obayashi, and Junji Endo, both of Nagoyashi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Nagoyashi, Japan

Filed Nov. 14, 1972, Ser. No. 306,197

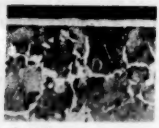
Claims priority, application Japan, Nov. 16, 1971, 46-91151

Int. Cl. C23c *9/02*

U.S. Cl. 117—107.2 P **8 Claims**

1. A method for the chromizing of an iron or ferrous alloy article in powdery treating material, comprising the steps of

packing said article in the powdery treating material consisting essentially of **0.5** to 80 percent by weight of one member selected from the group consisting of potassium tetrafluoroborate, sodium tetrafluoroborate, ammonium tetrafluoroborate and the mixture thereof and 20 to 99.5 percent by weight of one member selected from the group consisting of metallic



(×400)

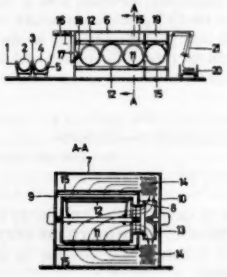
chromium, ferrochromium and the mixture thereof, heating said ferrous metal article within said powdery treating material at a temperature between 550° and 1,200°C for 1 to 30 hours, and taking said article out of said powdery treating material, thereby forming a chromized layer on the surface of said article.

3,853,604

METHOD FOR THE CONTINUOUS HIGH-GRADE FINISHING OF TEXTILE MATERIALS

Heinz Fleissner, Egelsbach near Frankfurt am Main, Germany, assignor to Vepa AG, Basel, Switzerland

Continuation of Ser. No. 651,849, July 7, 1967, abandoned. This application Mar. 20, 1972, Ser. No. 235,924
Claims priority, application Germany, July 9, 1966, 31472
Int. Cl. B44d *1/48*
U.S. Cl. 117—119.8 **23 Claims**



1. A method for effecting continuous high-grade finishing of textile material which comprises:

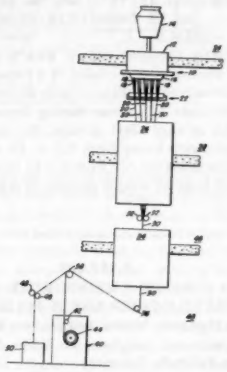
1. impregnating a textile material with a liquid finishing preparation containing a heat-curable synthetic resin,
2. removing excess liquid finishing preparation from the textile material without the application of heat to provide a liquid content of less than 100 percent bone dry weight,
3. passing the impregnated textile material over and in contact with a perforated surface of a sieve drum means subjected to a suction draft, and
4. drawing a gas heated to a temperature of about 140°C. to 190°C. through the perforated surface and through the material at a rate of about 0.5–5m./sec. to dry the textile material and to cure the resin rapidly within said material, said resin being cured in about 20 to 90 seconds to thereby prevent migration of the resin to the surface of the material during said drying.

3,853,605

PROCESS FOR APPLYING A COATING COMPOSITION TO GLASS FIBERS AND THE RESULTING COATED FIBERS

Dennis M. Fahey, Aspinwall, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 93,939, Dec. 1, 1970, abandoned. This application Jan. 26, 1973, Ser. No. 326,650
Int. Cl. B32b *17/06*; **B32d** *17/10*; **C03c** *25/02*
U.S. Cl. 117—126 GB **3 Claims**



1. In the method of coating glass fibers for use in reinforcing elastomeric products comprising: attenuating glass fibers from cones of molten glass; applying to the fibers as they are being attenuated a combined aqueous size and coating composition comprising 3 to 15 percent by weight of a resorcinol-formaldehyde resin; 20 to 70 percent by weight of a styrene-butadiene-vinyl pyridine terpolymer latex; 0.01 to 3 percent by weight of an amino-functional silane coupling agent and ammonia the improvement which comprises: stabilizing said combined sizing and coating composition by the addition of 0.1 to 6 percent by weight of an ammonia soluble carboxyl containing polymer, said carboxyl containing polymer being carboxylated polyvinyl acetate, carboxylated styrene, carboxylated polyethylene, carboxylated elastomers, or carboxylated acrylic polymers.

3,853,606

COATED METAL FASTENERS

Robert E. Parkinson, Monroeville, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 107,864, Jan. 19, 1971, abandoned. This application Oct. 4, 1972, Ser. No. 295,076
Int. Cl. B44d *1/42*; **F16b** *15/00*
U.S. Cl. 117—128.4 **9 Claims**

1. A process for coating a metal fastener useful for frictional insertion in wood or the like comprising:

dissolving in an organic solvent from about 50 to about 80 percent by weight of resin solids of rosin or a rosin-like resin which melts at a temperature of from about 60°C to about 150°C;

dispersing in a hot volatile aqueous alkali solution about 20 to about 50 percent by weight of resin solids of an ethylene copolymer or terpolymer comprising from about 75 to about 90 percent by weight ethylene and from about 10 to about 40 percent by weight of an ethylenically unsaturated carboxylic acid or an ester thereof free of

groups which are reactive with said rosin or rosin-like resin;
adding said rosin or rosin-like resin solution to said ethylene copolymer or terpolymer dispersion to form a mixture;
emulsifying said mixture;
dipping said metal fastener in said mixture; and
drying said coated metal fastener.

3,853,607

SYNTHETIC FILAMENTS COATED WITH A LUBRICATING FINISH

Yathiraja Iyengar, Newark, Del., and James Dean Lemley, Kinston, N.C., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 18, 1973, Ser. No. 407,573
Int. Cl. D06m *13/16, 15/66*
U.S. Cl. 117—138.8 F **10 Claims**

1. A synthetic filament coated with a lubricating finish composition consisting essentially of a linear polydimethylsiloxane oil and microcrystalline or polyalkylene wax dispersed in dialkyl phthalate oil carrier having from 8 to 14 carbon atoms in each of said alkyl groups, the proportions of the specified ingredients being from 0.1 to 25 weight percent of the polydimethylsiloxane oil, from 0.1 to 10 weight percent of the wax and at least 65 weight percent of the dialkyl phthalate oil carrier.

3,853,608

MANUFACTURE OF A REINFORCED, NON-WOVEN TEXTILE FIBER SHEET MATERIAL

Klaus-Dieter Hammer, Mainz, and Ludwig Klenk, Hallgarten, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Sept. 22, 1972, Ser. No. 291,323
Claims priority, application Germany, Sept. 24, 1971, 2147757
Int. Cl. C08c *17/16*
U.S. Cl. 117—140 **9 Claims**

1. A process for the manufacture of chemically bonded non-woven textile fiber sheet material which comprises
a. treating a non-woven textile fiber sheet material with a binder liquid composed of an aqeous dispersion of a synthetic elastomer containing chemically reactive groups and a solution of silicone oil in toluene,
b. eliminating excessive binder liquid from the material,
c. subjecting the resulting material to heat,
d. treating the resulting material with an impregnating liquid,
e. eliminating excess impregnating liquid from the material,
f. heating the material resulting from step (e),
g. treating the resulting material with a liquid containing a synthetic elastomer,
h. eliminating excessive elastomer liquid from the material,
i. coagulating elastomer remaining in the material, and
j. heating the resulting material.

3,853,609

SIZING PROCESS AND MATERIAL

Earle E. Allen, Jr., Chicago; James A. Smit, Country Club Hills; Robert R. Walter, Westmont, and Roger H. Jansma, Park Forest, all of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Filed Aug. 3, 1972, Ser. No. 277,643
Int. Cl. D21h *1/38*
U.S. Cl. 117—155 UA **3 Claims**

1. A cellulose material sized with at least one pound per ton of a half amide-half ammonium salt of an alpha olefine-maleic anhydride copolymer having 4 to 6 carbon atoms in the alpha olefine group and having an average molecular weight of at least 2,000.

3,853,610

COMPOSITE MATERIALS COMPRISING EPOXY RESIN MATRIX AND CARBON FIBERS

Joseph B. Byrne, Antioch, Calif., and Harvey D. Ledbetter, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 10, 1972, Ser. No. 233,751
Int. Cl. B44d *1/09*
U.S. Cl. 117—161 ZB **2 Claims**

1. Carbon fiber having improved bonding to an epoxy resin matrix said fiber having a Young's modulus parallel to the fiber axis of at least about 12×10^6 pounds per square inch and the surface of said fiber being coated with an essentially continuous coating of amorphous carbon, said coating having a thickness of from about 20 A to about 200 A and being obtained by deposition of a thermally carbonizable organic precursor onto the carbon fiber said organic precursor being thermally carbonized to amorphous form at temperatures less than 1,200°C.

3,853,611

WELDING MATERIAL FOR SUPER LOW TEMPERATURE STEELS

Tomokazu Godai; Tohoru Sugiyama, and Katushi Nishimura, all of Kamakura, Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Apr. 7, 1972, Ser. No. 242,202
Claims priority, application Japan, Apr. 10, 1971, 46-22530
Int. Cl. B23k *35/30, 35/36*
U.S. Cl. 117—205 **2 Claims**

1. An arc welding electrode which is applicable for low temperature steels, which comprises:
a core wire consisting essentially of no more than 0.2% carbon, 5-12% manganese, no more than 30% chromium, 4–8% niobium, no more than 22% iron and no more than 1.5% silicon, the balance being substantially nickel and extraneous impurities, covered with a flux consisting essentially of 10–50% calcium carbonate, 16–50% fluorspar, 2–20% magnesia clinker and no more than 10% rutile, wherein the ratio of fluorspar to calcium carbonate is in the range of 1–1.5.

3,853,612

METHOD FOR MAKING COATED RECEPTACLE FOR MICROWAVE COOKING OF FOOD

Louis Spanoudis, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Sept. 10, 1973, Ser. No. 395,974
Int. Cl. B44d *1/18*
U.S. Cl. 117—212 **9 Claims**

1. In the process for depositing a semiconductive tin oxide coating on a glass-ceramic receptacle for microwave cooking where a pyrolyzable tin compound is contacted with said glass-ceramic receptacle at a temperature sufficient to pyrolyze semiconductive tin oxide thereon, the improvement comprising selectively applying heat to predetermined portions of said glass-ceramic receptacle to raise the temperature of said predetermined portions have the pyrolysis temperature of said tin compound while maintaining the temperature of other portions of said receptacle below the pyrolysis temperature of said tin compound and then contacting the resulting heated glass-ceramic receptacle with said tin compound for a time sufficient to pyrolyze a semiconductive tin oxide coating on said predetermined portions.

3,853,613

METHOD OF MANUFACTURING AN ARTICLE AND ARTICLE MANUFACTURED BY MEANS OF THE METHOD

Hermanus Josephus Wilting, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 7, 1972, Ser. No. 312,847

Claims priority, application Netherlands, Dec. 18, 1971, 7117429

Int. Cl. B44d *1/18*; **B21b** *45/00*

U.S. Cl. 117—212 **6 Claims**

1. A method of providing a platinum pattern on a substrate said method comprising providing, in a pattern complementary to the desired platinum pattern, a layer of a material reactive with platinum on a substrate providing a layer of platinum on said material and on the exposed portions of the substrate, forming a reaction product of platinum and the material of the complementary pattern and selectively removing the reaction product of the platinum and the material from the body relative to the platinum thereby leaving the desired platinum pattern on the body.

3,853,614

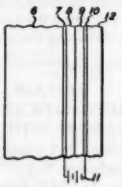
CYCLIC RECORDING SYSTEM BY THE USE OF AN ELASTOMER IN AN ELECTRIC FIELD

Nicholas X. Sheridon, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 101,729, Dec. 28, 1970, Pat. No. 3,716,359, which is a continuation of Ser. No. 23,649, March 30, 1970, abandoned. This application Nov. 24, 1972, Ser. No. 309,558

Int. Cl. B44d *1/18*

U.S. Cl. 117—217 **13 Claims**



1. The method of forming a flexible conductive metallic layer on the surface of an electric field deformable elastomer layer comprising the steps of:

a. vacuum evaporating a high melting point metal material and condensing it over the surface of said elastomer layer and,

b. vacuum evaporating a low melting point metal material and condensing it on said condensed high melting point metal material before mud-cracking is observed in said condensed high melting point material thereby forming a flexible conductive metal layer on said elastomer layer.

3,853,615

DEVICE FOR EXTRACTION OF PLANTS CONTAINING SUGAR

Hans-Dieter Sackofen, Braunschweig, and Dietrich Dittmann, Salzgitter-Lebenstedt, both of Germany, assignors to Braunschweigische Maschinenbauanstalt, Braunschweig, Germany

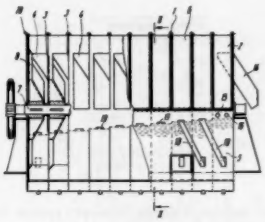
Filed Dec. 21, 1972, Ser. No. 317,169

Claims priority, application Germany, Jan. 8, 1972, 2200795

Int. Cl. C13d *1/12*

U.S. Cl. 127—5 **11 Claims**

1. In a device for the extraction of sugar from plant products containing sugar, having a horizontal container, an intake opening for feeding plant products and an outlet for the extraction liquid disposed at one end of the container, an intake opening for receiving extraction liquid and an outlet opening for discharging plant products at the other end of the container, and conveying means in said container for directing the plant products and the extraction liquid in counterflow; the improvement wherein said container is a stationary cylindrical container, comprising a plurality of stationary vertical partitions in said container dividing said container into a plurality of chambers extending along the axis of the container, drive shaft means extending through said chambers substantially



concentrically with the axis of the container, a separate lifting wheel mounted on said shaft in each chamber for rotation therewith, stationary delivery chute means in the upper portion of the container between each pair of adjacent partitions for delivering plant products from each chamber to the next adjacent chamber towards the outlet opening for discharging plant products, and tube means interconnecting each chamber with the adjacent chambers outside of said container, each tube extending from a liquid outlet opening in the bottom section of one chamber to a liquid intake opening at a determined level in the adjacent chamber toward the outlet opening for the extraction liquid.

3,853,616

SEPARATION OF SUSPENDED SOLIDS FROM LIQUIDS

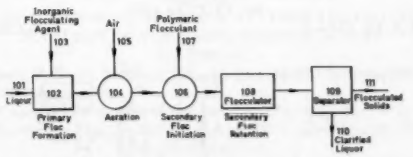
John Trethowan Rundell, Keston, and Paul Richmond Pottage, Stockton, both of England, assignors to Tate & Lyle Limited, London, England

Filed June 19, 1972, Ser. No. 263,784

Claims priority, application Great Britain, June 22, 1971, 29223/71

Int. Cl. C13d *3/00*

U.S. Cl. 127—48 **18 Claims**



1. A process for separating suspended solids from an aqueous liquor selected from sugar syrups, sugar liquors and sugar juices which comprises: forming a primary floc in the liquor containing suspended solids; aerating the liquor containing the primary floc, with agitation; distributing an organic polymeric flocculant uniformly throughout the liquid phase of the aerated liquor, to initiate the formation of a secondary floc therein; retaining the resultant mixture in a flocculator vessel with non-turbulent agitation preventing the segregation of the secondary floc from the liquor and allowing the secondary floc to grow for a period of from 15 seconds to 5 minutes; transferring the liquor, with minimal agitation and shear from the flocculator vessel to a separator vessel; allowing the secondary floc to segregate by flotation from the liquor in the separator

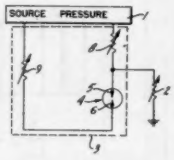
vessel; and separately removing clarified liquor and flocculated solids from the separator vessel.

3,853,617

FLUIDIC LOAD REGULATOR

Thomas J. Lechner, Jr., Menomonee Falls, Wis., assignor to Johnson Service Company, Milwaukee, Wis.

Filed Sept. 29, 1971, Ser. No. 184,686
Int. Cl. F15c *1/20*
U.S. Cl. 137—824 **11 Claims**



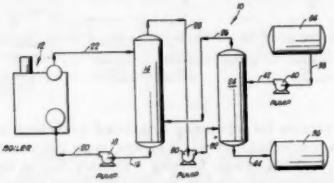
1. A fluidic regulated pressure supply system for supplying a regulated pressure to a variable flow load comprising, a first stream forming means including an outlet and a flow resistance means for calibrating a first stream pressure at said outlet for a minimal flow condition of said load, said load being connected to and supplied from a point between said flow resistance means and said first stream forming means outlet and upstream of said outlet, a second stream forming means mounted in opposed spaced relation to said first stream forming means for establishing a second stream, and said first and second forming means providing streams of relative strength, one to the other, causing impacting of said streams between said stream forming means and defining an impacting flow in proximity to the outlet of said first stream forming means wherein varying load flow conditions causes movement of the impacting flow of said streams relative to said first stream forming means outlet to vary the impedance of said first stream forming means to maintain the desired regulated pressure to the load with said varying load flow with respect to said point.

3,853,618

PROCESS FOR REMOVING COPPER DEPOSITS FROM SURFACES

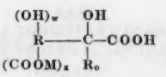
John A. Smith, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jan. 29, 1973, Ser. No. 327,281
Int. Cl. C23g *1/02*
U.S. Cl. 134—3 **16 Claims**



1. A process for removing copper and iron oxide deposits from steel surfaces which consists essentially of:

circulating an aqueous acid solution having a pH in the range of about 1.5 to about 5 and containing an hydroxy carboxylic acid, an acidic salt of said hydroxy carboxylic acid or a mixture of said acids and salts into contact with said surfaces so that the copper and iron oxide deposits are dissolved therein, said hydroxy carboxylic acid or acidic salt thereof having the general formula:



wherein R is hydrogen or an alkyl radical having in the range of from 1 to 5 carbon atoms, R_o is hydrogen or a $-CH_2COOH$ radical, M is hydrogen, sodium, potassium or ammonium, W is an integer having a value in the range of from 0 to 5, and X is an integer having a value in the range of from 0 to 5;

contacting the resultant spent aqueous acid solution containing dissolved iron and copper with a substantially immiscible liquid having the property of preferentially extracting at least a portion of dissolved copper from the acid solution;

separating the resultant extract liquid containing copper from the extracted aqueous acid solution; and

recirculating the extracted aqueous acid solution into contact with said surfaces.

3,853,619

METHOD FOR CLEANING AWAY PET STOOLS

Agnes P. Ged, 268 67th St., Brooklyn, N.Y. 11220

Filed Aug. 14, 1973, Ser. No. 388,194
Int. Cl. B08b *7/00*
U.S. Cl. 134—4 **3 Claims**

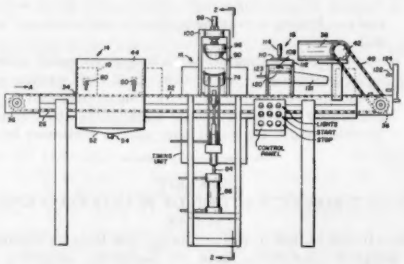
1. Method of cleaning away pet stools, comprising applying to the pet stools a cleaning composition comprising a solution of a film-forming acrylic polymer in a mixture of about 45 to about 65 parts methyl ethyl ketone, about 30 to about 50 parts toluol and about 1 to about 5 parts tricresyl phosphate, all by weight, and a bactericide, the solution containing about 1 to about 30 parts by weight of the acrylic polymer per 100 parts by weight of the mixture of methyl ethyl ketone, toluol and tricresyl phosphate, permitting the composition to harden the stools, and physically removing the stools.

3,853,620

METHOD FOR AUTOMATICALLY OPENING AND EMPTYING CONTAINERS INTO A BLENDING TANK

Anthony R. Peres, Bristol, N.Y., assignor to Peres Electronic Machinery, Inc., Rochester, N.Y.

Division of Ser. No. 153,942, June 17, 1971, Pat. No. 3,739,471. This application May 25, 1973, Ser. No. 364,056
Int. Cl. B08b *1/02, 9/00*
U.S. Cl. 134—6 **3 Claims**



1. A method of sequentially and automatically and mechanically opening each one of a continuous array of transported, upright cylindrical metal containers and removing the product contained therein, comprising the steps of:

transporting said array of said containers in succession;

cleaning the outside of each of said containers of said array during said transport;

momentarily stopping said transport of each of said containers and forcing a cutting tool into the circular top of each of said containers for severing off said top of each of said upright containers while stopped and then resuming said transport;

successively removing said severed top from each of said upright containers and depositing said tops successively in a top receptacle;

orienting each of said opened containers as said transport proceeds so that the open end of each of said containers is turned down as each of said containers advances for emptying substantially all of the product within each of said containers into a product receptacle;

directing a spray into said open ends of each of said turned down containers for rinsing out the remaining product within each emptied container into said product receptacle; and

successively depositing each of said emptied containers in a container receptacle.

3,853,621
METHOD FOR CLEANING SURFACES

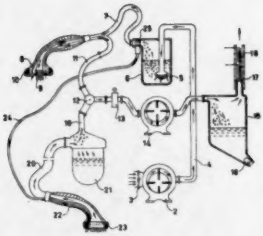
Soren Sollerud, Norrkoping, Sweden, assignor to Svenska Utvecklingsaktiebolaget, Stockholm, Sweden

Continuation of Ser. No. 99,293, Dec. 17, 1970, abandoned, which is a division of Ser. No. 786,988, Dec. 26, 1968, Pat. No. 3,574,239. This application Nov. 24, 1972, Ser. No. 308,956

Claims priority, application Sweden, Jan. 12, 1968, 448/68

Int. Cl. A47k *7/00*; **B08b** *3/08, 5/04*

U.S. Cl. 134—21 **8 Claims**



1. A method for the hygienic washing of bedridden patients comprising forming a foam of a hygienic washing material, applying the foam under pressure to a selected area of the patient's body to be washed and substantially immediately thereafter withdrawing said foam under suction from the selected area to remove impurities from and to disinfect the selected area.

3,853,622
STERILIZER FOR RUBBER PARTS

Werner Rutten, Erkrath, Germany, assignor to Anton Huber GmbH & Co. KG, Freising, Germany

Filed May 19, 1972, Ser. No. 255,089

Claims priority, application Germany, May 19, 1971, 2125102

Int. Cl. B08b *3/06*; **B67c** *1/00*; **A61l** *1/00*

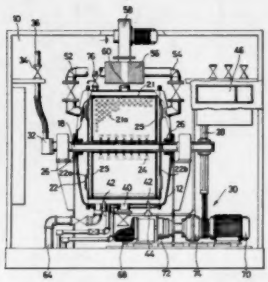
U.S. Cl. 134—25 R **13 Claims**

1. A sterilizer for obtaining rubber parts for pharmaceutical purposes and the like, which rubber parts are free of fretted portions thereof comprising, in combination:

a. a sterilizing drum for receiving the rubber parts, said drum having a perforated circumferential wall and a charging door;

b. a closable outer container, said outer container being provided with at least one charging opening and at least one emptying opening arranged on opposite sides of said outer container, said outer container being adapted to resist pressure differential which may exist between its outer and inner surfaces during operation and said drum being arranged in said outer container;

c. a shaft which passes through a passage out of said outer container, said drum being mounted on said shaft for rotary movement by said shaft and said passage being



adapted to resist pressure differential which may exist between its outer and inner surfaces during operation;

d. a drive unit, said drive unit being connected to said shaft for rotary driving of said shaft;

e. operational means for affecting speed of said drive unit to provide at least one speed of rotation which is sufficiently high that rubber parts within said sterilizing drum may be held by centrifugal force against said inner wall of said drum;

f. a liquid supply line and an outlet line, said supply line and said outlet line being in communication with said outer container; and

g. means for introducing pressurized steam into said drum.

3,853,623
ADDITIVE FOR AN ALKALINE BATTERY EMPLOYING DIVALENT SILVER OXIDE POSITIVE ACTIVE MATERIAL

Stuart M. Davis, Madison, Wis., assignor to ESB Incorporated, Philadelphia, Pa.

Continuation-in-part of Ser. No. 174,526, Aug. 24, 1971, abandoned. This application Aug. 1, 1973, Ser. No. 384,752

Int. Cl. H01m *35/02*

U.S. Cl. 136—20 **10 Claims**

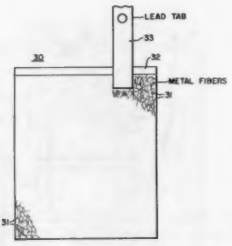
1. An alkaline battery having a negative electrode, an alkaline electrolyte, a divalent silver oxide positive electrode having a divalent silver oxide (AgO) content of at least 50% by weight, and a semi-permeable barrier separator between said negative and positive electrodes, the improvement comprising said alkaline electrolyte containing gold ions in the amount ranging from about 0.1 to about 10% by weight of silver in the positive electrode active material, said gold ions being present in the electrolyte only on the positive electrode side of said barrier separator, whereby the stability of the divalent silver oxide material in alkaline electrolyte is improved so as to yield less than about 65 microliters of gas per gram per hour when measured at 165°F. in a battery having an electrolyte of 18% by weight of sodium hydroxide.

3,853,624

HIGH ENERGY DENSITY IRON-NICKEL BATTERY

Jack T. Brown, Pittsburgh; William Feduska, Sewickley; Carl C. Hardman, and William Pollack, both of Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 55,824, July 17, 1970,. This application Apr. 20, 1972, Ser. No. 246,088
Int. Cl. H01m *43/04*
U.S. Cl. 136—25 **12 Claims**



1. an iron nickel storage battery comprising a case and a cover within which is disposed:

1. at least one positive electrode plate comprising:
   a. a flexible, expansible, 75 to 95 percent porous plaque made of fine, contacting, metal fibers having unmelted metal to metal bonds of the fibers at their contact points by an interdiffusion of metal fiber atoms across the fiber interface, the bonded fibers being free of melt protuberances, and an active electrode material comprising nickel hydroxide distributed upon and disposed within the pore volume of the plaque
   b. an electrical lead tab attached to the plaque
2. at least one negative electrode plate comprising:
   a. a flexible, expansible, 75 to 95 percent porous plaque made of fine, contacting, metal fibers having unmelted metal to metal bonds of the fibers at their contact points by an interdiffusion of metal fiber atoms across the fiber interface, the bonded fibers being free of melt protuberances, and an active electrode material comprising iron oxide particles having a fused coating of a sulfur additive said additive being present up to about 20 percent of the weight of the iron particles, said active material distributed upon and disposed within the pore volume of the plaque
   b. an electrical lead tab attached to the plaque
3. a separator between the plates
4. an alkaline electrolyte, and
5. means for making electrical connections to the respective plates.

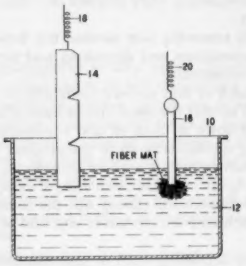
3,853,625

ZINC FIBERS AND NEEDLES AND GALVANIC CELL ANODES MADE THEREFROM

Demetrios V. Louzos, Rocky River, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 25,490, April 3, 1970, abandoned. This application July 12, 1972, Ser. No. 271,034
Int. Cl. H01m *43/00*
U.S. Cl. 136—30 **7 Claims**

1. Stable, nonpyrophoric, high surface area, virtually pure zinc filaments having a thin elongated central spine portion with at least a few poly-directional side growths of granular, dendritic or platelet form the thin elongated central spine portion consisting essentially of one or more single crystals preferentially orientated with an *a* axis parallel to the axis of said filaments, said filaments having a length of from about ⅛ to about 4 inches, an average diameter of about 0.006 inch,



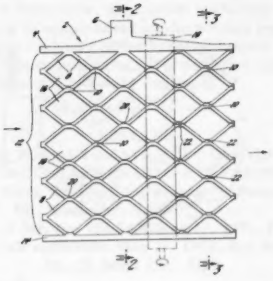
and a specific surface area of between about 0.4 and 0.6 square meter per gram.

3,853,626

METHOD AND APPARATUS FOR MAKING EXPANDED METAL LEAD-ACID BATTERY GRIDS

Elon Daniels, Jr., Frankton, and Richard H. Kline, Anderson, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 20, 1973, Ser. No. 398,974
Int. Cl. H01m *35/04*
U.S. Cl. 136—36 **5 Claims**



1. A method of making lead-acid storage battery plates comprising:

advancing a narrow lead strip, having a predetermined thickness, longitudinally between two rows of progressive dies and cutters, said strip having a central, longitudinal lug-forming portion and two expandable grid-forming portions flanking the lug-forming portion and extending to both longitudinal edges of the strip, and said rows comprising a plurality of dies and cutters which converge in incremental steps on the central lug-forming portion of the strip passing between them;

expanding the grid-forming portions along the longitudinal edges thereof by periodically shearing rectangular wire-like segments from said edges into a plurality of tiers of undulatory skeletal elements extending at acute angles to the plane of said lug-forming portions and such that successive tiers are offset one from the other and joined one to the other by a plurality of nodes which join the ends of successive segments in one tier to the centers of like segments in successive tiers, said nodes having rectangular, vertically transverse cross-sections and widths significantly greater than said predetermined thickness and equal to the sum of the widths of the adjoining skeletal elements, whereby two reticulated portions comprising a

plurality of polygonal paste-retaining cells bounded by said skeletal elements and nodes are formed and extend at acute angles from the central portion in gull-wing fashion when viewed head-on;

leveling the thusly expanded strip by folding said reticulated portions down into nearly the same plane as said central portion;

uniformly stretching the reticulated portions in directions substantially perpendicular to the direction the strip is fed through the dies by urging each tier of skeletal elements in those directions independently of the other tiers to uniformly size the cells, stretch the reticulated portions to a predetermined width and slightly rotate the rectangular nodes such that diagonally opposing edges of the nodes become salient in the principal planes of the reticulated portions;

flattening the reticulated portions by further rotating said nodes and compressing said salient edges into plateaus and thereby convert the rectangular cross-sections of said nodes to polygonal cross-sections having two opposing sides thereof laying in planes substantially parallel to the faces of the pasted plate and spaced one from the other by a distance greater than said predetermined thickness but substantially less than twice said predetermined thickness;

substantiallly engulfing the reticulated portions in a leady acitve material paste and sandwiching same between strips of paper which are substantially coextensive with said reticulated portions;

drying the paper-bound pasted strip; and

finally segmenting the pasted strip into individual battery plates.

3,853,627

LITHIUM ELECTRIC CELLS WITH NOVEL POSITIVE ACTIVE MATERIALS AND NON-AQUEOUS ELECTROLYTE

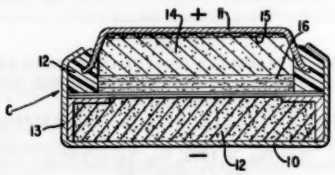
Gerard Lehmann, and Jean-Paul Gabano, both of Poitiers, France, assignors to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme), Romainville, France

Filed Apr. 27, 1971, Ser. No. 137,845

Claims priority, application France, Jan. 14, 1971, 71.01175

Int. Cl. H01m *17/02*

U.S. Cl. 136—83 **11 Claims**



1. Miniature electric cell with a nonaqueous electrolyte, said cell being of the type comprising a lithium negative electrode and a positive electrode whose active material consists of about 1 percent by weight of carbon black as conductive material and about 99 percent by weight of argentous chromate.

3,853,628

FUEL CELL

John B. Fox, Rt. 2, Box 567, Elmira, Oreg. 97437

Filed July 26, 1973, Ser. No. 382,756

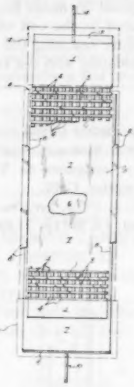
Int. Cl. H01m *27/04*

U.S. Cl. 136—86 D **6 Claims**

1. A fuel cell including,

an anode having a magnetic core acting on a metallic fuel,

an electrolyte solution of iron II and iron III chlorides, and



a solid cathode having irregular wall surfaces increasing the wall surface area contactable by the electrolyte, said cathode being of perforate construction additionally defining openings through the cathode permitting circulation of the electrolyte therethrough and efficient electron transfer intermediate the anode and cathode.

3,853,629

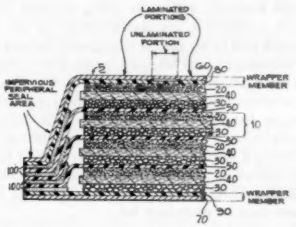
BATTERY HAVING LAMINATED WRAPPER MEMBER WHICH INCLUDES GAS VENTING PASSAGEWAY

Ronald C. Elliott, Appleton, Wis., assignor to ESB Incorporated, Philadelphia, Pa.

Filed Dec. 3, 1973, Ser. No. 421,155

Int. Cl. H01m *1/06*

U.S. Cl. 136—111 **6 Claims**



1. An improvement in a battery comprising

a. at least one cell, the cell comprising a positive electrode separated from a negative electrode by an electrolyte-containing layer, the cell being sealed at its periphery by a liquid and moisture impervious seal, and

b. at least one wrapper member secured to the cell and extending over at least some of the area enclosed by the peripheral seal, the wrapper member comprising the combination of

i. an inner layer which faces the cell and which is pervious to gases generated by the cell, and

ii. an outer layer which is impervious to liquids and which is less pervious than the inner layer to the gases generated by the cell,

wherein the improvement provides a gas-venting passageway, the improvement comprising the lamination of some

but not all of the coextensive surfaces of the inner and outer layers, the unlaminated portions of the two layers providing a passageway between the two layers for the venting of gases generated by the cell, the passageway being situated beyond the inside face of the inner layer so that gases generated by the cell must first pass through the first layer before reaching the passageway, the passageway communicating with the exterior of the battery.

3,853,630

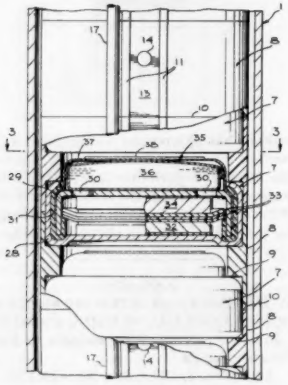
BATTERY FROM STORAGE CELLS

Ernst Hausler; Manfred Stommel, and Otto Werner, all of Duisburg, Germany, assignors to Yardney International Corporation, Los Angeles, Calif.

Filed Apr. 2, 1973, Ser. No. 347,108

Int. Cl. H01m *21/00*

U.S. Cl. 136—114 **12 Claims**



1. A battery comprising a plurality of gasproof button storage cells, each with precharged, dry electrodes disposed within a cell housing, said cells being stacked in a battery housing and activatable by introduction of an electrolyte thereinto, each cell being sealed and having its own electrolyte container within said cell housing, each said container being connected via a pressure duct with a central pressure generator having a pressure inducer, whereby pressure exerted from said generator forces electrolyte in said container from the same and into contact with said electrodes in said cell, each said cell having a curved deformable membrane lid with said electrolyte container arranged underneath said lid, said battery including spacers defining said pressure duct from which leads a cross duct to each said lid.

3,853,631

METHOD FOR INCREASING ACTIVITY OF CARBON ELECTRODES FOR ELECTROCHEMICAL CELLS WITH ACID ELECTROLYTE AND PRODUCT THEREOF

Harald Bohm, Glashutten, Germany, assignor to Licentia Patent Verwaltungs GmbH, Frankfurt, Germany

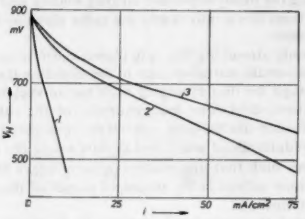
Filed Jan. 22, 1973, Ser. No. 325,636

Claims priority, application Germany, Jan. 21, 1972, 2202898

Int. Cl. H01m *13/02*

U.S. Cl. 136—121 **6 Claims**

1. In a method for producing an activated carbon oxygen electrode for electrochemical cells with acid electrolytes, wherein carbon powder is activated by treatment with a reactant gas prior to being formed into the electrode, the improvement which comprises: forming a mixture of carbon powder and a catalytic metal salt by mixing the carbon powder with a solution of the metal salt; activating said mixture with an inert gas at a temperature between 800° and 1,000°C; and



thereafter further activating the mixture at a temperature between 800° and 1,000°C with ammonia or a mixture of ammonia and inert gas.

3,853,632

THERMOELECTRIC COMPOSITION

Edward F. Hampl, Jr., Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 635,948, April 20, 1967, abandoned, which is a continuation-in-part of Ser. No. 463,148, June 11, 1965, abandoned. This application Jan. 5, 1973, Ser. No. 321,222

Int. Cl. H01v *1/15*

U.S. Cl. 136—238 **19 Claims**

1. In a thermoelectric generator, at least one P-type thermoelectric leg or P-type thermoelectric leg segment that consists essentially of copper, silver, and one member of the group tellurium and selenium in proportions defined by one of the two following tables:

1. for tellurium compositions,

a. 32.5 atomic percent tellurium 33.7 atomic percent

b. 27 atomic percent copper 66.5 atomic percent

c. 1 atomic percent silver 40 atomic percent;

2. for selenium compositions,

a. 32.5 atomic percent selenium 33.7 atomic percent

b. 60 atomic percent copper 66.5 atomic percent

c. 1 atomic percent silver 7 atomic percent.

3,853,633

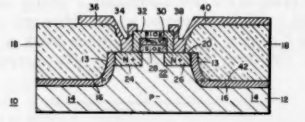
METHOD OF MAKING A SEMI PLANAR INSULATED GATE FIELD-EFFECT TRANSISTOR DEVICE WITH IMPLANTED FIELD

William Eddie Armstrong, Tempe, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 4, 1972, Ser. No. 312,013

Int. Cl. H01l *7/54*

U.S. Cl. 148—1.5 **14 Claims**



1. A method for treating a semiconductor body for forming a device region within said body suitable for manufacturing at least one MOS structure therewithin including a gate oxide element, and for forming a field region surrounding said device region having a high field inversion voltage characteristic comprising the steps of:

providing a body of semiconductor material of one tyep conductivity and said body having an upper surface;

forming a first oxide layer on said upper surface of said body of semiconductor material, and said layer is formed by thermal oxidation resulting in the formation of a layer suitable for use as the gate oxide element of the MOS structure;

depositing a first making layer on said first oxide layer, and said layer is suitable for use both as a mask against implanting ions into said body of semiconductor material and for use as a mask against thermal oxidation of the underlying portion of the upper surface of said body of semiconductor material;

forming a second oxide layer on said first masking layer;

patterning said second oxide layer for retaining a portion of said second oxide layer overlying a corresponding portion of said intervening masking layer and overlying a corresponding portion of said first oxide layer suitable as the gate element and also overlying the device portion of said upper surface of said semiconductor body in which the MOS structure is to be formed, and said patterning also being operative for exposing the remaining portions of said masking layer;

etchably removing said exposed portion of said first masking layer for exposing the underlying portions of said first oxide layer;

implanting impurity ions of said one conductivity type through said exposed portion of said first oxide layer into said body of semiconductor material to form an implanted field region under said exposed portion of said first oxide layer, and said impurity ions forming a field region of said one type conductivity and said field region being positioned to surround a portion of said semiconductor body;

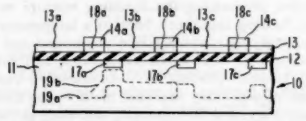
heating said resulting body of semiconductor material in an inert atmosphere for redistributing said impurity ions deeper into said body;

further heating said body of semiconductor material in an oxidizing atmosphere for oxidizing the upper surface of said body underlying the exposed portion of said first oxide layer resulting in such an increase in the thickness of said exposed oxide layer as to be suitable as a field oxide layer over said upper surface of said body of semiconductor material not masked by said masking layer whereby, the masked portion of said first oxide layer is suitable for use as the gate oxide element of the MOS structure and the implanted field region increases the field surface inversion voltage characteristic of the semiconductor structure and the field oxide layer provides a more even surface for the resulting semiconductor body.

3,853,634
SELF-ALIGNED IMPLANTED BARRIER TWO-PHASE CHARGE COUPLED DEVICES

Gilbert F. Amelio, Saratoga; Choong-Ki Kim, and Phillip J. Salsbury, both of Sunnyvale, all of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed May 21, 1973, Ser. No. 362,132
Int. Cl. H011 7/54
U.S. Cl. 148—1.5 **9 Claims**



1. The method of forming ion-implanted regions in semiconductor material overlaid by insulation and a layer of polycrystalline silicon, which comprises the steps of:

forming strips of ion-absorbing and impurity-masking material on the surface of said polycrystalline silicon;

forming photoresist over the surface of said polycrystalline silicon and said strips of ion-absorbing and impurity-masking material;

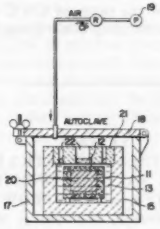
removing selected portions of said photoresist to expose portions of said polycrystalline silicon and portions of said strips of ion-absorbing and impurity-masking material; and

implanting ions in the semiconductor material underlying the exposed polycrystalline silicon thereby to form in said semiconductor material a plurality of ion-implanted regions.

3,853,635
PROCESS FOR MAKING CARBON-ALUMINUM COMPOSITES

Joseph F. Demendi, St. Marys, Pa., assignor to Pure Carbon Company, Inc., St. Marys, Pa.

Filed Oct. 19, 1972, Ser. No. 299,048
Int. Cl. C22f 1/04
U.S. Cl. 148—3 **4 Claims**



1. A process for impregnating a mass of carbon particles with an alloy of aluminum, silicon and at least one other metal comprising the steps of:

melting a quantity of said alloy,

placing a mass of carbon particles in a porous crucible formed from a refractory material, said particles being smaller than 40 microns and having a porosity range of 30 to 60 percent by volume, the porosity of the porous crucible being at least 20 percent by volume,

placing the porous crucible in an impermeable crucible,

pouring the molten alloy over said porous crucible and into said impermeable crucible,

equalizing the temperature between said molten alloy and said crucibles,

subjecting said crucibles, carbon particles and molten alloy to a gas pressure of between 2,000 psi and 4,500 psi for from one to five minutes to force said molten alloy to penetrate the porous crucible and impregnate the carbon particles,

rapidly cooling the porous crucible to room temperature, and then

removing the thus formed billet of alloy-impregnated carbon particles.

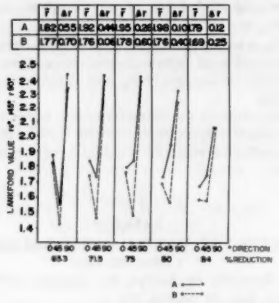
3,853,636
METHOD FOR MANUFACTURING COLD ROLLED STEEL EXCELLENT IN PRESS-FORMABILITY

Gennosuke Tenmyo, Nippon, and Kozo Yamada, Kawasaki shi, both of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 876,347, Nov. 13, 1969, abandoned. This application May 30, 1972, Ser. No. 257,982
Claims priority, application Japan, Nov. 14, 1968, 43-82864
Int. Cl. C21d 9/48
U.S. Cl. 148—12.1 **5 Claims**

1. A method of producing a cold rolled low carbon rimmed or capped steel having a low planar anisotropy (Δr) and a high

normal anisotropy and having a manganese content in the range of 0.03 to 0.25 percent, comprising: cold reducing with



a reduction rate of from 75 to 84 percent, and then annealing at a temperature within the range of 630°C to 850°C and in a decarburizing or decarburizing-denitrifying atmosphere.

3,853,637

METHOD OF TREATING ARTICLES UNDER DIFFERENTIAL VACUUM CONDITIONS WITH EXTERNAL GAS FLOW

Robert A. Gray, Cleveland, and George M. Prochko, Middleburg Heights, both of Ohio, assignors to R. A. Gray and Co., Inc., Cleveland, Ohio

Filed June 25, 1973, Ser. No. 372,950
Int. Cl. C21d *1/00*
U.S. Cl. 148—13 **6 Claims**

1. The process of treating articles of manufacture comprising the steps of placing the articles within a first enclosure which is fluidly connected to a second enclosure through an orifice, continuously drawing a vacuum in said second enclosure from a vacuum source to produce a pressure of between 10 microns and 6,700 microns in said second enclosure, continuously introducing a gas under pressure from an exterior source into said first enclosure which gas may be inert. or functional so as to always maintain a higher gas pressure in said first enclosure than in said second enclosure and cause continuous gas flow from said first enclosure to said second enclosure through said orifice, said pressure in said first enclosure being between 100 microns and 10,000 microns, said continuous gas introduction into said first enclosure being at such a volumetric flow rate as to maintain said aforementioned pressures in said first and second enclosures.

3,853,638

QUENCHING OIL COMPOSITION

Dale J. Wilpers, Godfrey, Ill., assignor to Shell Oil Company, Houston, Tex.

Filed June 25, 1973, Ser. No. 373,065
Int. Cl. B23k *35/24*
U.S. Cl. 148—29 **6 Claims**

1. A quenching oil composition consisting essentially of a mineral oil, having a viscosity of from about 15 to about 200 SUS at 100°F and an aromatic content of from 8 to 60 percent, and from about 0.01 to about 0.03 percent by weight of a vicinal dehydrocarbyl-substituted 2-mercaptothiazole, each hydrocarbyl substituent having from one to six carbon atoms.

3,853,639

COLD ROLLED STEEL STRIP WITH IMPROVED DRAWING PROPERTIES AND METHOD FOR PRODUCING SAME

Ian F. Hughes, Munster, Ind., assignor to Inland Steel Company, Chicago, Ill.

Continuation of Ser. No. 130,496, April 1, 1971, abandoned. This application Feb. 15, 1973, Ser. No. 332,659
Int. Cl. C21d *9/48;* **C22c** *39/54*
U.S. Cl. 148—12 C **16 Claims**

1. A method for producing a finished steel strip with improved deep drawing properties, said method comprising the steps of:

providing a solidified killed steel consisting essentially of 0.04 –0.06 wt. percent carbon, 0.02–0.50 wt. percent manganese, less than 0.015 wt. percent nitrogen, titanium in an amount by weight at least six times the combined carbon and nitrogen content, and a balance consisting essentially of iron;

hot rolling said steel into hot rolled strip, with a hot roll finishing temperature greater than 1,645°F.;

cold rolling said hot rolled strip into cold rolled strip with a cold reduction of at least 60 percent;

annealing said cold rolled strip, at a temperature exceeding 1,285°F. and below the temperature at which austenite begins to form in said steel, without decarburizing, for a time sufficient to completely recrystallize the cold rolled strip and produce a crystallographic orientation in which there is a relatively high incidence, in the plane of the strip, of cube on corner crystal planes and a relatively low incidence, in the plane of the strip, of cube on face crystal planes;

said strip having a grain size, after annealing, at least as fine as 8.0 and a carbon content, after annealing, essentially the same as the carbon content before annealing;

and temper rolling after annealing;

said finished steel strip having an average plastic strain ratio (r) of at least 1.9 and a strength, expressed as 0.2 percent proof stress, in the range 15,000–25,000 psi.

3,853,640

LUBRICANTS FOR PRESSING TRANSITION METAL-RARE EARTH POWDER TO BE SINTERED

John G. Smeggil, Elnora, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed June 22, 1973, Ser. No. 372,689
Int. Cl. H01f *1/02*
U.S. Cl. 148—105 **3 Claims**

1. A process for producing a sintered product of compacted particulate cobalt-rare earth alloy with improved magnetic stability which comprises providing particles of cobalt-rare earth alloy having an average size of up to about 10 microns, providing a lubricating organometallic compound which is inert to said alloy particles and which at room temperature is air-stable and a solid or liquid and which at a temperature below 500°C completely decomposes and yields only products of decomposition consisting of gaseous non-metallic product and a metal vapor, admixing said particles of cobalt-rare earth alloy and an amount of said organometallic compound ranging from about 0.5 percent to about 10 percent by weight of said alloy particles, diepressing the resulting mixture to form a green body, heating said green body at a temperature below 500°C completely decomposing said compound and producing said gaseous product of decomposition and said metal vapor, said gaseous product of decomposition completely diffusing out of said body and said metal vapor condensing metal on said body, and then sintering said body at a temperature of at least 900°C to a density of at least about 87 percent of theoretical, said condensed metal having no significant deteriorating effect on the magnetic properties of said sintered product, said decomposition and sintering being carried out in an inert atmosphere.

3,853,641
METHOD FOR PRODUCING SINGLE-ORIENTED SILICON STEEL SHEETS HAVING HIGH MAGNETIC INDUCTION

Akira Sakakura; Satoru Taguchi; Toshiya Wada; Kiyoshi Ueno, and Takaaki Yamamoto, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 812,147, April 1, 1969, abandoned. This application Sept. 24, 1971, Ser. No. 183,686
Claims priority, application Japan, Apr. 24, 1968, 43-21686
Int. Cl. H01f *1/04*
U.S. Cl. 148—111 **2 Claims**

1. A process for producing a single-oriented silicon steel sheet having a magnetic induction value above 19,100 gauss consisting essentially of:

a. hot-rolling a silicon steel ingot consisting essentially of 0.015% to 0.085% C, 1–3.5% Si, with the proviso that when Si is present in an amount of 1–2.5%, C is present between 0.015% and 0.085% and when Si is present in an amount of 2.5–3.5%, C is present in an amount between 0.025% and 0.085%; S in an amount up to 0.060%, 0.02 to 0.045% acid soluble Al, and at least one element selected from the group consisting of 0.007 to 0.30% Se and 0.007 to 0.20% Te, more than about 0.004% N and the rest being Fe to produce a hot-rolled steel sheet;

b. annealing the hot-rolled steel sheet to precipitate AlN at a temperature range of 850° to 1,200°C when Si is present in an amount of from 1 to 2.5%, and at a temperature range of 960° to 1,200°C when Si is present in an amount of from 2.5 to 3.5%, the annealing being carried out for a time of 30 seconds to 30 minutes and

c. cold-rolling the thus-annealed steel sheet to obtain a steel sheet of final thickness, the cold-rolling being effected at a reduction rate of 60% to 95% when there is a single cold-rolling step and when there is a plurality of cold-rolling steps, the final cold-rolling step being carried out at a reduction rate of 60 to 95%.

3,853,642
PROCESS FOR MAKING SINTERED IRON BASE SHAPED BODIES CONTAINING COPPER AND TIN WITH A TEMPERING STEP FOLLOWED BY SLOW COOLING

Friedrich Josef Esper, Leonberg, and Robert Zeller, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sept. 29, 1972, Ser. No. 293,374
Claims priority, application Germany, Oct. 1, 1971, 2149147
Int. Cl. B22f *3/24*
U.S. Cl. 148—126 **6 Claims**

1. The process of making a sintered shaped body comprising liquid phase sintering of a body consisting of a compacted pulverulent mixture of 0.5 to 4.5% tin, 0.3 to 7% copper, balance iron, the ratio of tin to copper being between 1 : 0.7 and 1 : 1.5, so as to form a sintered body, tempering said sintered body at a tempering temperature between substantially 600° and 750°C; and cooling said body from said tempering temperature to room temperature, said step of cooling being carried out at a rate of at most about 15°C/min at least in the temperature range between said tempering temperature and approximately 300°C.

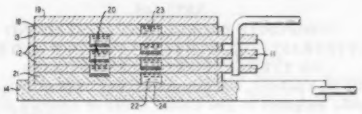
3,853,643
EPITAXIAL GROWTH OF GROUP III-V SEMICONDUCTORS FROM SOLUTION

Hans Willem Verleur, Reading, Pa., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 18, 1973, Ser. No. 370,947
Int. Cl. H01l *7/38*
U.S. Cl. 148—171 **14 Claims**

1. A method for the simultaneous epitaxial growth of crystalline layers of Group III-V compound semiconductor on a plurality of crystalline substrate wafers from a plurality of solution portions comprising:

1. placing the wafers in an apparatus together with but out of contact with a body of constituents which, when heated, results in a solution mass of a nutrient solution,
2. raising the temperature of the apparatus to a first temperature at which the nutrient solution is saturated with the Group III-V compound semiconductor, Serial No. 370,947
3. separating each solution portion from the solution mass,
4. contacting each solution portion with a broad face of one substrate wafer,

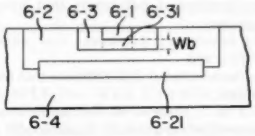


5. constraining each solution portion in a direction perpendicular to the broad face to be less than 3 millimeters in thickness,
6. reducing the temperature of the solution portions and substrates in order to produce epitaxial growth and
7. terminating epitaxial growth characterized in that the solution portions are simultaneously separated from the solution mass, simultaneously brought into contact with the substrate wafers and simultaneously constrained in the growth direction, each operation being accomplished by displacing a first set of carrier plates relative to a second set of carrier plates which second set is interleaved with the first set and in that the solution portions include neither the uppermost nor the lowermost quantity of the solution mass.

3,853,644
TRANSISTOR FOR SUPER-HIGH FREQUENCY AND METHOD OF MANUFACTURING IT

Yasuo Tarui, Tokyo; Toshihiro Sekigawa, Yokohama, and Yutaka Hayashi, Tokyo, all of Japan, assignors to Kogyo Gijutsuin, Tokyo-to, Japan

Continuation of Ser. No. 36,608, May 12, 1970, abandoned. This application Sept. 7, 1972, Ser. No. 286,880
Claims priority, application Japan, Sept. 18, 1969, 44-73846; Sept. 18, 1969, 44-73850
Int. Cl. H01l *7/44, 29/78*
U.S. Cl. 148—175 **5 Claims**



1. A method of manufacturing an insulated gate field effect transistor, which comprises the steps of:

providing as a source region a semiconductor body of a first conductivity type containing two kinds of impurities which are opposite in conductivity type and different in concentration and in diffusivity, the impurity lower in concentration having greater diffusivity and a second conductivity type opposite the first conductivity type, removing a portion of said source region to form a recess therein, filling said recess by successive epitaxial growth to form a lightly doped drain region of the first conductivity type and a heavily doped drain contact region of the same conductivity type as said drain region, diffusing by

heat treatment said impurity contained in said source region and lower in concentration and higher in diffusivity into a part of said drain region adjacent to said source region to form a base region between said source and drain regions, applying a gate insulator over said semiconductor body and applying a gate electrode over said insulator, a channel being induced in the surface of said base region by field applied from said gate electrode through said insulator, the length of said channel being determined only by the diffusion length of said diffused impurity.

3,853,645

COMPOSITE PROPELLANT CONTAINING POLYTETRAFLUOROETHYLENE POWDER AND BUTYL OR ETHYLENE-PROPYLENE RUBBER

Martin H. Kaufman, and Edward M. Roy, both of China Lake, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 30, 1970, Ser. No. 90,210
Int. Cl. C06d *5/06*
U.S. Cl. 149—19.3 **7 Claims**

1. A propellant molding powder comprising:
from about 70 to 90 percent by weight inorganic oxidizer;
up to about 20 percent by weight polytetrafluoroethylene; and
from about 5 to about 15 percent by weight of a synthetic rubber selected from the group consisting of butyl rubber, ethylene propylene rubber and mixtures thereof.

3,853,646

SMOKELESS COMPOSITE PROPELLANTS CONTAINING CARBOXY - OR HYDROXY - TERMINATED POLYMERS AND A NITRO-ORGANIC OXIDIZER

Milton B. Frankel, Tarzana; David R. V. Golding, Malibu; Basil H. Minnich, Semi, and Vernon E. Haury, Santa Susana, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 5, 1967, Ser. No. 629,866
Int. Cl. C06d *5/06*
U.S. Cl. 149—19.4 **3 Claims**

1. Smokeless rocket propellant compositions comprising:
from 5 to 40 percent cured matrix polymers having an oxygen to carbon atom ratio from from about 0 to 0.5 selected from the group consisting of:
hydroxy terminated polyesters that have been cured by isocyanates;
hydroxy terminated polybutadienes that have been cured by isocyanates;
hydroxy terminated polyethers that have been cured by isocyanates;
carboxy terminated polyesters that have been cured by epoxides; and
carboxy terminated polybutadienes that have been cured by epoxides;
from 0.3 to 5 percent of a compound selected from the group consisting of triols, tricarboxylic acids, triepoxides and triisocyanates; and
from 60 to 90 percent of an oxidizer selected from the group consisting of bis-trinitroethyl urea, tetrakis-trinitroethyl orthocarbonate, and combinations thereof.

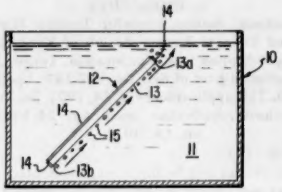
3,853,647

PROCESS FOR CREATING DESIGNS ON MARBLE

David W. Donoho, Baltimore, Md., assignor to Hilgartner Natural Stone Company, Inc., Baltimore, Md.

Filed Oct. 2, 1972, Ser. No. 294,191
Int. Cl. B44c *1/22*
U.S. Cl. 156—2 **10 Claims**

1. A process for creating a design on a piece of limestone which comprises positioning said piece of limestone in an acidic solution so that the exposed surface of the piece faces downwardly and the gas bubbles which are evolved due to the



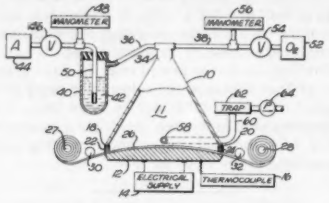
reaction of the acid with the slab remain in controlled contact with the exposed surface of said slab.

3,853,648

PROCESS FOR FORMING A METAL OXIDE PATTERN

Alan R. Janus, Pasadena; Peter C. Fletcher, Monrovia; Michael H. Ridosh, Jr., Simi Valley, and Walter P. Freihube, Sepulveda, all of Calif., assignors to Material Sciences Corporation

Filed Aug. 14, 1972, Ser. No. 280,606
Int. Cl. C23c *11/08*
U.S. Cl. 156—7 **7 Claims**



1. A process for forming an optical mask defined by a selected pattern of ferric oxide on a substrate, comprising:
depositing on said substrate, a uniform layer of amorphous ferric oxide;
heating selected regions only of said layer to a temperature of at least 160°C to convert said selected regions of ferric oxide to a crystalline form while leaving remaining regions in an amorphous form to obtain a desired pattern defined by said crystalline ferric oxide and amorphous ferric oxide regions; and
then selectively removing only said remaining regions of amorphous ferric oxide.

3,853,649

Patent Not Issued For This Number

3,853,650

STRESS SENSOR DIAPHRAGMS OVER RECESSED SUBSTRATES

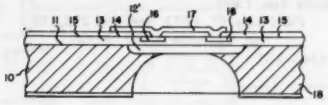
Jerome T. Hartlaub, New Brighton, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 12, 1973, Ser. No. 331,934
Int. Cl. H01l *7/00*
U.S. Cl. 156—13 **23 Claims**

1. A method for providing a semiconductor material diaphragm constrained by a base, the method comprising:
providing a rapid etch region in a substrate of a first material;
providing a first layer of a second material to bound in part said rapid etch region, said first layer having an exposed outer major surface opposite said rapid etch region with said second material being a semiconductor of a first conductivity type, said rapid etch region being capable of being etched away at a substantially greater rate than

both said first layer and remaining portions of said substrate adjoining said rapid etch region;

providing an access to said rapid etch region from a first major surface of said substrate opposite said first layer; and



etching within said access differentially, whereby said rapid etch region as present is removed while both said first layer and remaining portions of said substrate adjoining said rapid etch region substantially remain.

3,853,651

PROCESS FOR THE MANUFACTURE OF CONTINUOUS FILAMENT NONWOVEN WEB

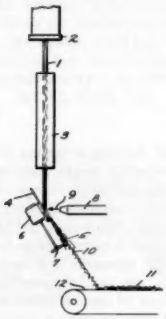
Pierre Porte, Lyon, France, assignor to Rhone-Poulenc-Textile, Paris, France

Filed Jan. 4, 1973, Ser. No. 320,843

Claims priority, application France, Jan. 4, 1972, 72.00264

Int. Cl. B32b *31/16*

U.S. Cl. 156—73.6 **13 Claims**



1. In a process for manufacturing spunbonded nonwoven textile fabrics, said process comprising extruding a plurality of filaments of a fiber forming polymer, orienting the extruded filaments by stretching same about 200 to about 400 percent of their original length, and thereafter distributing the filaments on a receiving surface by impinging the filaments on a smooth deflector surface, the improvement comprising vibrating in a substantially vertical plane at least that portion of the deflector surface where the plurality of filaments have their greatest width at a vibration frequency of about 1.67 to 1,000 vibrations per second, and at an amplitude of about 5 to 30 percent of the length of the vibrating deflector surface.

3,853,652

PROCESS FOR PREPARATION OF SLATES OF SANDWICH ARRANGEMENT

Tamio Ishiai; Koji Aigami; Tasako Nishii, and Masahiro Saito, all of Wakayama, Japan, assignors to Kao Soap Co., Ltd., Chuo-ku, Tokyo, Japan

Filed Feb. 15, 1973, Ser. No. 332,585

Claims priority, application Japan, Feb. 16, 1972, 47-16297

Int. Cl. B32b *5/18*

U.S. Cl. 156—79 **10 Claims**

1. In a process for preparing a sandwich arrangement of slates, the steps which comprise:

coating a polyurethane prepolymer compound solution formed by incorporating a water-conductive agent and catalyst into a polyurethane prepolymer having terminal isocyanate groups, on a first unhardened raw slate containing from 15 to 45 percent by weight of water; placing another unhardened raw slate containing from 15 to 45 percent by weight of water on top of the solution coated onto the first slate; and then effecting the foaming of the polyurethane prepolymer by conducting water from said slates into said solution by means of said water-conductive agent to react with said isocyanate groups to form a polyurethane foam layer sandwiched between said slates, and hardening the foam layer.

3,853,653

MANUFACTURE OF TIRES

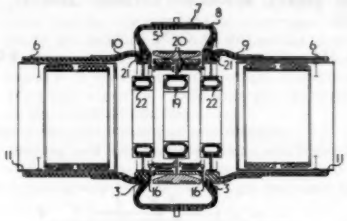
Alois Olbert, Gelnhausen, and Gerhard Mertens, Hanau am Main, both of Germany, assignors to Dunlop Limited, London, England

Filed Feb. 18, 1972, Ser. No. 227,573

Claims priority, application Germany, Feb. 24, 1971, 2108781

Int. Cl. B29h *17/16, 17/26*

U.S. Cl. 156—128 R **14 Claims**



1. A method for building up a radial-ply tire comprising the steps of arranging a radial carcass ply pocket in a hollow-cylindrical disposition, positioning a pair of bead cores in a mutually spaced relation radially outward of said carcass ply pocket, shaping the carcass ply region situated between the spaced bead cores into a toroid while simultaneously reducing said mutual spacing between said beads, limiting the radial expansion of the carcass to a smaller diameter compared to its final diameter thereby providing lateral bulges in the carcass sidewalls, turning-over the carcass ply ends about the bead cores, and fastening the carcass ply ends which are turned over the bead cores to the bulged-out carcass sidewalls, and subsequently releasing the diameter limitation on the carcass.

3,853,654

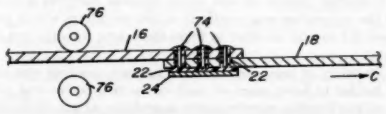
METHOD FOR SPLICING WEB END PORTIONS WITH PLASTIC RIVETS

David L. Patton, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 28, 1973, Ser. No. 336,582

Int. Cl. B31f *5/00*

U.S. Cl. 156—157 **8 Claims**



1. A method of forming a rivet splice comprising the steps of:

placing a patch of compressible material on a base in which said material has the property when heated of becoming viscous and forming gas causing the material to expand;

placing two web ends over said patch to form an unheated patch and web sandwich;

pressing said unheated patch and web sandwich together along surface portions thereof surrounding an unpressed portion causing the material in said patch between said surface portions to flow into said unpressed portion to form a bubble of unheated material in said unpressed portion; and

piercing said bubble of unheated material with a hot pin whereby said web is ruptured and the combination of heat, pressure and gas applied to the unheated material causes the material to melt and to expand around the pin and through said web to form a rivet, when cooled on the opposite side of said web from said patch.

3,853,655

METHOD OF AND FIXTURE FOR WELDING FLEXIBLE MEMBERS INTO A FRAME

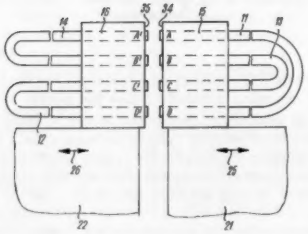
Ernst Pecha, Grosbettlingen, Germany, assignor to Bielomatik Leuze & Co., Neuffen, Wurttemberg, Germany

Filed June 9, 1972, Ser. No. 261,241

Claims priority, application Germany, June 11, 1971, 2128922

Int. Cl. G03d *15/04*

U.S. Cl. 156—159 **9 Claims**



1. A method of welding together flexible, elongated members at their respective end points to form a frame comprising:

a. placing one-half of the flexible members in a first holder and the remaining flexible members in a second holder adjacent said first holder, each of the flexible members being placed in the holders in a generally U-shaped configuration such that the first holder contains at least two of the flexible members in side-by-side relationship whereas the second holder contains at least one flexible member lying, at least in part, within the U-shaped mouth of one other flexible member and such that the respective end portions of the members which are to be welded to one another to form the frame lie adjacent each other;

b. moving at least one of said holders towards the other holder to bring pairs of each of the respective end points of the flexible members into a position which allows them to be welded to one another; and

c. simultaneously welding the respective end portions to one another to form the frame.

3,853,656

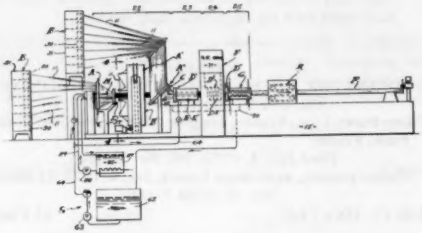
DRY LAY-UP METHOD AND APPARATUS FOR PRODUCING CONTINUOUS LENGTH COMPOSITE MEMBERS

Arthur O. McNeely, Redondo Beach, and Wiley T. Kennedy, Santa Ana, both of Calif., assignors to Mackenhus Corporation, Santa Ana, Calif.

Filed July 17, 1972, Ser. No. 272,378

Int. Cl. B65h *81/02, 81/06*

U.S. Cl. 156—172 **75 Claims**



1. The method of forming a lamina of impregnated and cured continuous unlimited length composite, and including; anchoring the one rear end of an elongated mandrel having a cross section including a configuration to establish the inner profile of the composite, distributing dry substantially parallel filaments into supported engagement upon said mandrel configuration, carding the filaments in a uniform layer contiguously combed upon the said mandrel configuration, then impregnating the layer of parallel filaments placed contiguously upon the said mandrel configuration with liquid material, drawing the liquid impregnated and placed layer of filaments through a die configuration opposed to said mandrel configuration to establish the outer profile of the composite and simultaneously curing the same into a finished article comprising the said composite, and advancing the finished article comprising the said composite and thereby drawing the dry lay-up of filaments through said aforsaid distributing, combing, impregnating, and subsequent sizing and curing steps.

3,853,657

BONDING OF POLY(ETHYLENE TEREPHTHALATE) INDUCED BY LOW-TEMPERATURE PLASMAS

Ernest L. Lawton, Durham, N.C., assignor to Monsanto Company, St. Louis, Mo.

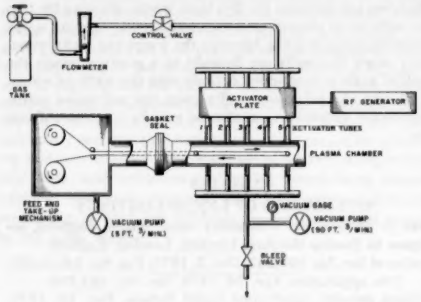
Filed Feb. 14, 1972, Ser. No. 225,764

Int. Cl. B29h *9/02;* **B01k** *1/00*

U.S. Cl. 156—180 **6 Claims**

1. A treatment for filaments derived from a long chain synthetic polymer composed of at least 85 percent by weight of an ester of dihydric alcohol and terephthalic acid comprising exposing the surface of a fiber for a period of at least about 1 second to a more low temperature gas plasma at a pressure of not moe than about 2 torr and a concentration of electrons

of about 10^{10}–10^{13} per cubic centimeter, whereby bondability of the filament to rubber with resin-latex adhesives is substantially improved without alteration of bulk properties of said filament.



3,853,658

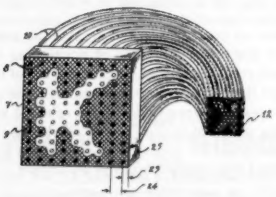
FIBER OPTICAL IMAGE MAGNIFIER PANEL AND METHOD OF MANUFACTURE

Robert Johan Ney, 484 Braves Trail Ln., Media, Pa. 19063

Continuation-in-part of Ser. No. 161,765, July 12, 1971, abandoned. This application Apr. 19, 1973, Ser. No. 352,406

Int. Cl. G02b *5/16*

U.S. Cl. 156—180 **7 Claims**



1. A method of fabricating a fiber optical image transfer and magnifier device comprising: threading a plurality of light conducting fibers through an orderly array of holes in an aperture plate forming the bottom of a mould cavity; casting an interstitial matrix by pouring a liquid matrix material into said cavity and solidifying the liquid; removing said matrix from the mould while maintaining the plurality of attached fibers intact and lifting the matrix to a position to obtain a desired fiber length while feeding the plurality of fibers through the holes of the aperture plate; casting a second metal matrix in the mould cavity while the plurality of fibers are located in the array of holes of the aperture plate and affixed to the previous casting; inserting movable fiber guides into the spaces between adjacent rows of optical fibers, two intersecting sets of said guides being inserted between fiber rows at a position located between said castings; placing compression die jaws around the plurality of fibers between the fiber guides and the previous casting in close proximity to the fiber guides; compressing the plurality of fibers in the die jaws to a close packed configuration; cutting the plurality of fibers near the guides; placing and setting a binder on the close packed fiber configuration and then grinding and polishing both fiber end surface arrays.

3,853,659

METHOD FOR IMPROVING THE BONDING OF NYLON FILAMENTS BY THE USE OF A HYDROGEN HALIDE GAS

Jerome H. Rhodes, Raleigh, N.C., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 29, 1972, Ser. No. 319,132

Int. Cl. D04h *3/12*; **C09j** *5/02*

U.S. Cl. 156—181 **4 Claims**

1. A process for transforming an unbonded fibrous mat of nylon fibers into a high-strength bonded non-woven web comprising the steps of:

A. preparing the fibers for bonding by

1. increasing the moisture regain of said nylon fibers to at least 2% based on the weight of said nylon fibers;
2. subjecting said mat to a gaseous atmosphere having a temperature of from 50° to 120°F. and containing less than about 2% by volume of a hydrogen halide gas and greater than about 0.5% by volume of water vapor, but lower than the dew point of said water vapor--hydrogen halide gas mixture at any given gaseous atmosphere temperature, said nylon fibers increasing said moisture regain to at least 3% based on weight of said fibers and absorbing at least 2% of said hydrogen halide gas based on the weight of said fibers; and

B. completing the bonding of said fibers by

1. pressing said fibers together while said fibers contain said water and hydrogen halide gas; and
2. removing said hydrogen halide gas from said fibers.

3,853,660

PROCESSES RELATING TO SENSIBLE COATINGS AND TRANSFER RIBBONS FOR PLASTIC CARDS THERETO

Gary J. Peters, Xenia, and Stanley R. Hermann, Dayton, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Division of Ser. No. 176,739, Aug. 31, 1971, Pat. No. 3,754,959. This application Apr. 2, 1973, Ser. No. 347,119

Int. Cl. H01f *10/00*

U.S. Cl. 156—230 **5 Claims**

1. A process for producing a plastic card comprising sequentially:

a. providing a polyvinyl chloride or polyvinyl chloridepolyvinyl acetate plastic card base empaneled with a coating of TiO_2 pigment in a binder of aminotriazine resin and polyester or ethylene vinyl acetate copolymer latex and providing a transfer medium comprising a flexible carrier substrate with a thin colored sensible coating thereon wherein the colored sensible coating comprises a dry mixture of 10 to 25 weight percent of a polymeric material, 60 to 85 weight percent of aminotriazine resin and 5 to 25 weight percent of colored sensible material; b. placing the transfer medium in contact with the empaneled plastic card base with the colored sensible coating in contact with a surface of panel; and subjecting the flexible carrier substrate to a pressure ranging from 20 to 15,000 psi for a time ranging from 5 milliseconds to 1.0 second to transfer the colored sensible coating to the empaneled card base;

c. removing the flexible carrier substrate from the colored sensible coating transfer and empaneled plastic card base; and

d. subjecting the colored sensible coating and plastic card base to additional pressure ranging up to 100 psi at a temperature ranging from 225° to 300° F. for a time ranging from 0.1 to 1.0 seconds.

3,853,661

METHOD OF PRODUCING PLASTIC BAGS

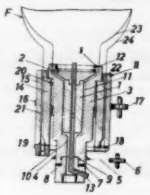
Michio Sudo, Tokyo, Japan, assignor to Mitsubishi Yuka Kabushiki Kaisha, Tokyo, Japan, a part interest

Filed Apr. 24, 1972, Ser. No. 247,146

Claims priority, application Japan, May 10, 1971, 46-29241; May 10, 1971, 46-30490; May 13, 1971, 46-31587

Int. Cl. B29c *17/00*

U.S. Cl. 156—244 10 Claims



1. A method of forming plastic bags comprising the steps of extruding plastic material in molten condition through at least two concentric annular gaps formed in concentric cylindrical dies to form at least one pair of bubbles of plastic material in which one is located within the other; rotating during such extrusion at least one of said dies relative to the other; and blowing air only into said one bubble so that the whole outer surface thereof is in full contact with the inner surface of the other bubble.

3,853,662

METHOD FOR LAMINATING UNIAXIALLY STRETCHED THIN LAYERS OF FILM AS WARPS AND WEFTS

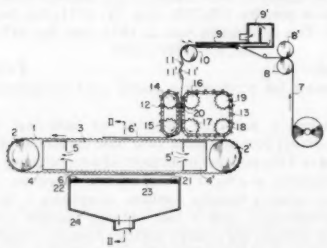
Masahide Yazawa, Tokyo, and Kimio Inoue, Kobeshi, both of Japan, assignors to Polymer Processing Research Institute Ltd., Tokyo and Kobe Steel Co., Ltd., Kobeshi, Hyogoken, Japan

Continuation-in-part of Ser. No. 214,571, Jan. 3, 1972, abandoned. This application Aug. 1, 1973, Ser. No. 384,546

Claims priority, application Japan, Jan. 19, 1971, 46-1273

Int. Cl. B32b *31/00*; B29c *17/00*

U.S. Cl. 156—265 4 Claims



1. A process for laminating uniaxially stretched layers of film as warps and wefts, which comprises supplying a uniaxially stretched thin layer of film, cut to a desired length, continuously at a constant speed over a belt circulating at a speed higher than the layer-supplying speed through a pinching-and-forwarding means provided in proximity to the circulating belt, while sucking the layer onto the belt by a negative pressure exerted below from the belt, subjecting the layer to frictional rubbing by sliding over the belt owing to a difference between the layer-supplying speed and the belt-circulating speed, placing the thin layer upon the belt by suction at the time when the rear end of the thin layer has passed through the pinching-and-forwarding means thereby to make the thin layer move at a speed equal to that of the belt, allowing successive thin layers, cut to the desired length, to be transferred onto the belt by suction at a distance corresponding to the difference between the layer-supplying speed and the belt-circulating speed one by one, bringing the thin layer as wefts over a warped thin air-permeable layer of uniaxially stretched materials of film having cleavages as warps, the thin layer wefts being crossed over the thin layer warps, allowing the thin layer wefts to be placed upon the continuously running warps by drawing force exerting between the warps and wefts immediately when the wefts are brought in a position where the length of wefts is overlapped entirely with the width of warps, and placing the successive wefts upon the successive warps continuously without any substantial gaps by repetition of said steps.

3,853,663

APPLICATION OF LIQUID COATINGS

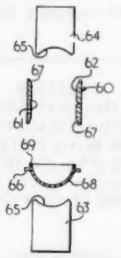
James N. McGlashen, Winstanley, near Wigan, England, assignor to Dunlop Holdings Limited, London, England

Division of Ser. No. 204,262, Dec. 2, 1971, Pat. No. 3,823,687. This application Apr. 24, 1974, Ser. No. 463,504

Claims priority, application Great Britain, Dec. 16, 1970, 59827/70

Int. Cl. B29c *27/10*

U.S. Cl. 156—304 9 Claims



1. A method of coating selected areas of an article with a liquid, which comprises the steps of positioning said article above the surface of said liquid, positioning a tool beneath the surface of said liquid, in correspondence with said article, said tool being shaped to correspond with the selected areas of said article, raising said tool so that it does not break through the surface of said liquid but causes the liquid above it to rise and thereby contact the selected areas of the article.

3,853,664

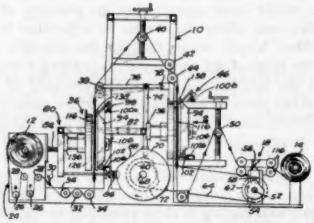
BAG MAKING MACHINE AND METHOD

Arthur E. LaFleur, Manistee, Mich., assignor to Square Bag-It Corp., Manistee, Mich.

Filed Aug. 1, 1973, Ser. No. 384,611

Int. Cl. C09j *5/00*; B32b *31/00*; B30b *15/34*

U.S. Cl. 156—306 26 Claims



1. In a machine for performing an auxiliary operation, such as sealing, slitting, printing or the like, on a continuous length of a flexible plastic web having a longitudinally extending fold

therein the combination comprising, a frame, means on said frame for feeding said web in a lengthwise direction, means on said frame at one zone in the path of travel of the web for maintaining the web in a lengthwise tensioned condition so that the line of folding follows a generally straight path, carriage means on said frame at said zone mounted for relatively free movement in a direction transversely to the path of travel of the web and in a plane generally parallel to the plane of the web, guide means on said carriage means adapted to extend into and between the folded plies of the web and engage the web at the fold line for causing the carriage to shift laterally on said frame in response to lateral weaving of the fold line of the web as the web travels through said zone, and means carried by and movable with said carriage means for performing said operation on the portion of the web travelling through said zone, said operation performing means being disposed adjacent said guide means so that the operation performing means acts on said web adjacent the portion thereof engaged by the guide means.

3,853,665

METHOD OF BONDING USING POLYESTER-WAX FUSION ADHESIVES

Arno Gardziella, Witten-Rudinghausen, Germany, assignor to Dynamit Nobel AG, Troisdorf bez. Cologne, Germany

Filed Mar. 7, 1972, Ser. No. 232,511

Claims priority, application Germany, Mar. 18, 1971, 2113207

Int. Cl. C09j *5/00*; **B32b** *31/00*

U.S. Cl. 156—332 **16 Claims**

1. A method for securing surfaces together which comprises contacting a first surface with a composition comprising a polyester and a wax, said wax present in the said composition in an amount between about 0.01 and 5 percent by weight, based on the weight of said composition in molten form, applying a second surface to said molten form of said composition, applying pressure to the surfaces till said composition sets, and recovering a material in which the surfaces are secured together.

3,853,666

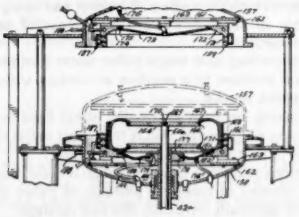
METHOD AND APPARATUS FOR RETREADING TIRES

Carlton Keith Barefoot, Muncie, Ind.

Division of Ser. No. 52,534, July 6, 1970, Pat. No. 3,729,358. This application Dec. 18, 1972, Ser. No. 316,353

Int. Cl. B29h *5/02*, *17/36*

U.S. Cl. 156—394 **11 Claims**



1. Apparatus for retreading tires comprising, in combination, a pair of mating shell members, a mold element mounted in each of said mating shell members, each of said mold elements comprising a rigid matrix and a flexible diaphragm supported by said rigid matrix, said mold elements being adapted to receive a tire to be retreaded, a tire engaging and centering means positioned within said mating shell members, said tire engaging and centering means and the tire defining an inner pressure chamber, means for pressurizing said inner pressure chamber, said mating shell members defining at least one exterior pressure chamber in opposed relationship to said inner pressure chamber and the interior of the tire, means for pressurizing said exterior pressure chamber, and heating means for raising the temperature within said mating shell members.

3,853,667

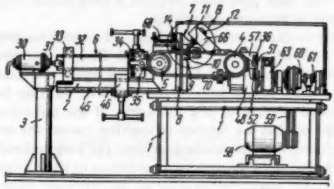
MACHINE FOR WRAPPING CONTINUOUS CORES IN TAPE MATERIAL

Ivan Vasilievich Polshikov, ulitsa Parkovaga, 10, kv. 5, Kursk; Lev Nikolaevich Kurdin, ulitsa Pervomaiskaya, 90, kv. 57, and Alexandr Timofeevich Titarenko, Poselok NIIRP, 2, kv. 77, both of Moskovskaya Oblast, all of U.S.S.R.

Filed Oct. 26, 1972, Ser. No. 301,257

Int. Cl. B29h *17/32*

U.S. Cl. 156—422 **4 Claims**



1. A machine for wrapping continuous cores in tape material, said machine comprising:

a bedframe;

a driving pulley mounted on said bedframe and a driven pulley mounted on said bedframe, said pulleys adapted to move a core;

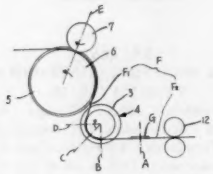
a mechanism adapted to move said driven pulley for tensioning said core; and

a mechanism for spiral-pattern wrapping of said core in tape material comprising a rotatable gear having a radial slot; a holder for a reel of the tape material being secured to the end face of said gear at an angle to the axis of rotation of said gear; a carriage mounted on said bedframe; means for setting displacements of said carriage along said bedframe in relation to the said driving pulley so as to allow continuous cores of different cross-sectional shapes and lengths to be wrapped; a hollow axle affixed to said carriage for mounting said rotatable gear thereon, the interior of said axle accomodating one of the branches of said core tensioned on said pulleys, said hollow axle having longitudinal cut for coinciding with said radial slot of said gear when one of the branches of said core is inserted through both said slot and said cut into said hollow axle; a mechanism for centering said core about the axis of rotation of said gear during wrapping said core which is mounted on said hollow axle of said carriage and is disposed between said driving pulley and said carriage; at least one pair of idle gears adapted to drive said rotatable gear and disposed so that the distance between the points of tangency of their pitch circles exceeds the length of arc of said slot of said rotatable gear; and a flexible arm cantilever-mounted on said holder and adapted to be in permanent contact with the tape material unwinding off said reel.

3,853,668
FILM SPLICING APPARATUS

Tetsuo Onishi, Wakayama-ken, and Hiroo Ikeura, Osaka, both of Japan, assignors to Noritsu Koki Co., Ltd., Wakayama-ken, Japan

Filed Apr. 10, 1973, Ser. No. 349,761
Claims priority, application Japan, Apr. 13, 1972, 47-43835
Int. Cl. B31f *1/00*
U.S. Cl. 156—461 **4 Claims**



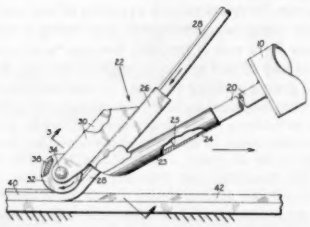
4. Apparatus for splicing photographic film by means of applying a tape section having an adhesive surface, which tape is adhered to the film at a joint formed by abutting the ends of two film sections together, the tape section being of a length longer than the width of the photographic film so that each end of the tape protrudes beyond a longitudinal edge of the film, said apparatus comprising:

means to impart tension to film, and a spool member having a pair of spaced flanges, said flanges defining a flat-bottom groove and being spaced apart a distance corresponding to the sum of the width of the film being processed plus twice the thickness of the adhesive splicing tape so that the tension in the film causes the ends of the splicing tape protruding beyond the longitudinal edges of the film to be forced into a position at right angles to said film and inwardly together as the film joint passes around said spool.

3,853,669
WELDING TIP FOR PLASTIC WELDING GUN

Peter F. Werstlein, 4620 N.E. Glison St., Portland, Oreg. 97213

Filed Aug. 28, 1972, Ser. No. 284,232
Int. Cl. B29c *27/02*
U.S. Cl. 156—497 **1 Claim**

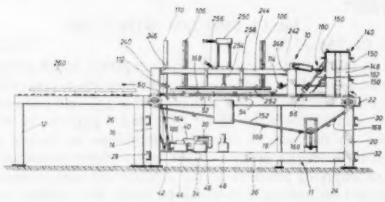


1. A welding tip for plastic welding guns of the type having an outlet of heated gas for melting thermoplastic material to be used in a weld seam, comprising a hollow body member arranged to receive heated gas from the welding gun, said hollow body member having a lower open end for discharging the heated gas, a guide tube integral with said hollow body member at a forward portion thereof, said guide tube being integral with said hollow body member only at a lower portion thereof in a common wall structure, said guide tube leading upwardly from said body member above said common wall portion at an acute angle so as to be spaced forwardly of said body member through a greater portion of its length, said guide tube having open ends and being arranged to slidably guide a welding rod therethrough for presenting a portion thereof at the bottom to a weld seam at less than an acute angle under the influence of heated air from said body member, a portion of said common wall being cut away from the bottom between said body member and said guide tube to expose a lower portion of a welding rod above the lower end of the latter in said guide tube directly to heat from the hollow body member while still in the guide tube to preheat the rod, roller support means integral with said guide tube at a forward portion thereof, a pressure roller mounted on said roller support means in longitudinal alignment with said hollow body member and said guide tube and arranged to smoothen and press weld material softened by heated air from said hollow body member in a weld seam by drawing the roller thereover, said roller support means, said guide tube, and said hollow body member all being formed from a heat conducting material.

3,853,670
PALLET MANUFACTURING MACHINE

Thomas L. Cox, Beaumont, and David G. Rodriquez, Vidor, both of Tex., assignors to J & J Manufacturing Company, Beaumont, Tex.

Filed Nov. 17, 1972, Ser. No. 307,491
Int. Cl. B32b *31/00*
U.S. Cl. 156—562 **19 Claims**



1. A machine for manufacturing disposable, recyclable pallets comprising:

a pallet sheet feed section adapted to retain a generally vertically oriented stack of pallet sheets disposed therein; a pallet assembly section being provided in said machine; a pair of spaced pallet sheet support rails being pivotally disposed at said pallet assembly section and being adapted to receive single pallet sheets from said pallet sheet feed section and to support said sheets in oriented spaced relation to the position of a plurality of spaced and oriented pallet blocks;

means urging said pallet sheet support rails to a first position for support for said single pallet sheet and being pivotally yieldable to allow downward movement of said single pallet sheet;

means for moving said single pallet sheet downward from said first position to a position in contact with said oriented pallet blocks;

means passing beneath said pallet sheet feed section for conveying single pallet sheets from said pallet sheet feed section to said pallet sheet support rails;

a pallet block magazine being provided on said machine and being adapted to receive a plurality of pallet blocks oriented in generally vertically stacked relation;

conveyor means for transporting a plurality of pallet blocks from said pallet block magazine, said conveyor means passing adjacent said pallet block magazine and carrying spaced flight pusher means, said flight pusher means extracting blocks from said magazine and positioning the same in spaced relation relative to one another and in spaced and oriented relation to the position of a single pallet sheet on said pallet sheet rails;

means for applying adhesive material to one surface of each of said pallet blocks as said pallet blocks are conveyed from said pallet block magazine;

means at said pallet assembly section for moving said single pallet sheet from said pallet sheet support rails and said one surface of each of said pallet blocks into engagement and for applying mechanical pressure therebetween to cause adhesive material to adhere said pallet blocks to said pallet sheet and retracting from the completed pallet after said pallet blocks have been adhered to said pallet sheets; and

means for conveying completed pallets from said pallet assembly section.

3,853,671

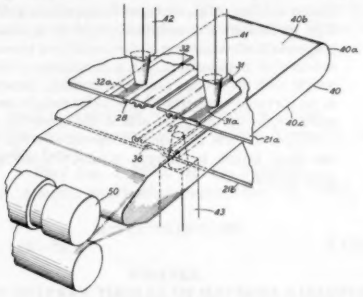
APPARATUS FOR MAKING MULTIPLE PLASTIC BAGS WITH RECLOSABLE FASTENER THEREON

Steven Ausnit, 124 E. 61st St., New York, N.Y. 10021

Filed July 25, 1972, Ser. No. 275,063

Int. Cl. A44b *17/00*; **B32b** *7/08*; **B29c** *27/08*; **B23k** *29/00*

U.S. Cl. 156—580 **14 Claims**



1. A mechanism for making multiple plastic bags with reclosable fasteners thereon comprising:

means for continuously supplying flat tubular plastic film;

means for forming a continuous opening in the upper layer of the film with the edges of the opening forming the upper edges of front walls of bags to be made from the film, the portion beneath the upper bag edges forming the rear wall of the bags;

means for feeding a rear continuous fastener strip having a web portion between the edges through the opening and against the rear wall of the film;

means for accurately positioning web portions of first and second front fastener strips against said upper bag edges of the film portion;

first and second continuous high speed heat sealing means attaching said web portions of said first and second strips to the film;

and third continuous high speed heat sealing means attaching the web portion of the rear strip to the rear wall of the film.

3,853,672

FALLING STRAND DEVOLATILIZER USING ONE PREHEATER WITH TWO FLASH CHAMBERS

Robert E. Gordon, Monson, and George A. McNeill, West Springfield, both of Mass., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 9, 1973, Ser. No. 322,242

Int. Cl. B01d *1/28, 1/16, 1/06, 1/26*

U.S. Cl. 159—2 MS **5 Claims**

1. Improved falling strand devolatilizer apparatus comprising:

A. a shell and tube heat exchanger means adapted for input, passage through, and discharge from, the tubes thereof of a process fluid and further adapted for receipt, passage through, and discharge from, the shell interior thereof of a heat exchange fluid whereby for heat transfer from said heat exchange fluid to said process fluid occurs during operation thereof,

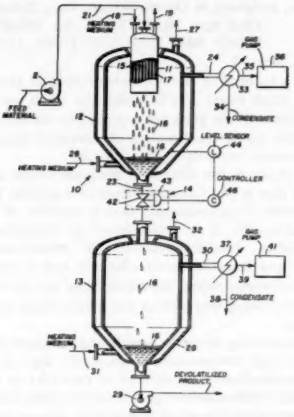
B. a first and a second vessel, each vessel having:

1. a generally tapered lower region terminating in a discharge port,

2. a vapor take-off port in an upper portion thereof,

3. an input port means adapted to discharge process fluid therein at a point between said discharge port and said vapor take-off port,

4. jacket means with heat exchange fluid entrance and exit ports and adapted to heat said vessel, and first vessel being adapted to be positioned spatially above said second vessel,



C. interconnection means joining the discharge port of said first vessel with the input port means of said second vessel,

D. said heat exchanger means being interconnected with said first vessel and adapted to have the discharge end portions of said tubes thereof pass into and be in communication with the interior of said first vessel,

E. first gas pump means interconnected with said vapor take-off port of said first vessel and adapted to maintain desired pressures in said first vessel,

F. second gas pump means interconnected with said vapor take-off port of said second vessel and adapted to maintain desired pressures in said second vessel but below the desired pressures maintained in said first vessel,

G. liquid pump means interconnected with the discharge port of said second vessel and adapted to remove process fluid therefrom without loss of desired pressure in said second vessel,

H. variable fluid transfer plug valve means axially connected to said interconnection means and adapted to vary the rate of process fluid flow from the discharge port of said first vessel through said interconnection means and into the input port means of said second vessel,

I. actuator means engaged with said fluid transfer valve means and adapted in response to control signals applied thereto to operate said fluid transfer valve means,

J. level sensing means associated with said first vessel and adapted to measure fluid level in said lower region thereof and to generate a signal representative of fluid level when said first vessel is generally oriented so as to have its tapered lower region directed downwardly,

K. controller means functionally interconnecting said level sensing means with said actuator means and responsive to a predetermined set signal and to signals from said level sensing means, said controller means being adapted to

apply control signals to said actuator means after comparing said level sensing means signal to said set signal whereby a predetermined rate of process fluid flow from the discharge port of said first vessel through the input port means of said second vessel is maintainable when said devolatilizer apparatus is operating with first and said second vessels generally vertically oriented.

3,853,673

STRENGTHENED GLASS ARTICLES AND METHODS USING GLASS PRECURSOR ION EXCHANGE MEDIUM

Leon Levene, Toledo, Ohio, and Ian M. Thomas, Temperance, Mich., assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 30, 1973, Ser. No. 356,071
Int. Cl. B44f *1/00;* **C03c** *15/00, 13/00*
U.S. Cl. 161—1 **20 Claims**

1. In a method of strengthening a silicate glass article containing alkali metal ions in which the alkali metal ions in the surfacelayer of the glass are replaced by different alkali metal ions from an external source at elevated temperatures, the improvement comprising the steps of:

1. applying to the surface of the glass article a glass precursor that is (A) a clear solution of a soluble, further hydrolyzable metallosiloxane that is capable of being further hydrolyzed to a cross-linked polymetallosiloxane, the soluble, further hydrolyzable metallosiloxane being formed from a silicon alkoxide and a precursor of an alkali metal oxide, the alkali metal ion of the alkali metal oxide being larger than the alkali metal ion in the glass; and
2. maintaining the glass article and the glass precursor at an elevated temperature sufficiently high to convert the metallosiloxane as defined in part (A) to a cross-linked polymetallosiloxane gel structure and a glass structure containing the alkali metal ion that is larger than the alkali metal ion in the glass, the maintaining of the glass article at the elevated temperature being for a period of time sufficient to form a compressive stress layer in the glass article from the glass precursor formed from the cross-linked polymetallosiloxane to thereby produce a strengthened glass article.

3,853,674

MULTIPLE ION EXCHANGE STEPS FOR STRENGTHENING GLASS AND METHODS OF MAKING SAME

Leon Levene, Toledo, Ohio, assignor to Owens-Illinois Inc., Toledo, Ohio

Filed Apr. 30, 1973, Ser. No. 356,072
Int. Cl. B44f *1/00;* **C03c** *15/00, 13/00*
U.S. Cl. 161—1 **11 Claims**

1. In a method of strengthening a silicate glass article containing alkali metal ions in which the alkali metal ions in the surface layer of the glass are replaced by different alkali metal ions from an external source at elevated temperatures not substantially above the strain point of the glass of the article, in which the silicate glass article is coated with a glass precursor that forms a homogenous mixture of metal oxides as the ion exchange medium by:

1. applying to the surface of the glass article a first glass precursor that is (A) a clear solution of a soluble, further hydrolyzable metallosiloxane that is capable of being further hydrolyzed to a cross-linked polymetallosiloxane, the soluble, further hydrolyzable metallosiloxane being formed from a silicon alkoxide and a precursor of an alkali metal oxide, the alkali metal ion thereof being larger than the alkali metal ion in the glass; and
2. maintaining the glass article and the glass precursor coating at an elevated temperature sufficiently high to convert the metallosiloxane to a homogenous mixture of metal oxides and maintaining the glass article with the coating thereon at an elevated temperature not substantially above the strain point of the glass article for a period of time sufficient to provide a compressive stress layer in the glass article; the improvement comprising the steps of:

a. applying to the surface of the glass article having the stress layer, a second glass precursor, the second glass precursor having an alkali metal ion that is larger than the alkali metal ion that was in the first glass precursor, the second glass precursor being a clear solution of insoluble, further hydrolyzable metallosiloxane that is capable of being further hydrolyzed to a cross-linked polymetallosiloxane, the further hydrolyzable metallosiloxane being formed from a silicon oxide in a precursor of an alkali metal ion, the alkali metal ion thereof being larger than the alkali metal ion in the first glass precursor and the glass; and

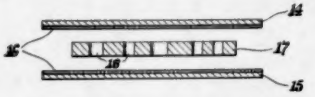
b. maintaining the glass article and the second glass precursor coating at an elevated temperature sufficiently high to convert the metallosiloxane to a cross-linked polymetallosiloxane that is converted to a homogenous mixture of metaloxides, the maintaining of the glass article with the second precursor coating thereon being at an elevated temperature not substantially above the strain point of the glass article for a period of time sufficient to form a second compressive stress layer in the glass article to thereby produce a strengthened glass article.

3,853,675

MATERIALS ADAPTED TO EXHIBIT VARYING VISUAL APPEARANCES

Christopher John Edwards, Marlow, England, assignor to Thomas de la Rue International Limited, London, England

Filed Dec. 29, 1971, Ser. No. 213,706
Claims priority, application Great Britain, Dec. 30, 1970, 61710/70
Int. Cl. B44f *1/12*
U.S. Cl. 161—3 **25 Claims**



1. Sheet material comprising at least two superimposed colored light-transmitting non-fibrous organic polymer film-forming layers, each layer of a pair of layers being differently colored, and between each adjacent pair of said layers and in substantially intimate contact therewith a single substantially planar layer which is partially light-reflecting and partially light-transmitting with the ratio of the intensity of transmitted light to the intensity of reflected light being dependent upon the angle of incidence of the light and being a maximum when the angle of incidence is normal to said layer, the colors of the light-transmitting layers being so selected that when either face of the composite material is viewed by transmitted light from a source of substantially white light the color observed is different from that observed when any light-transmitting layer alone is viewed in like manner.

3,853,676

REFERENCE POINTS ON FILMS CONTAINING CURVED CONFIGURATIONS OF MAGNETICALLY ORIENTED PIGMENT

Irving S. Graves, Media, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 59,679, July 30, 1970,. This application Dec. 29, 1972, Ser. No. 319,757

Int. Cl. B44c *3/02*

U.S. Cl. 161—5 10 Claims

1. A decorative film comprising a pigmented film of film-forming material containing magnetically orientable pigment that is oriented in curved configurations, such pigmented film produced by (i) providing a soft film of film-forming material containing 0.1 percent to 95 percent (by weight of the film) of magnetically orientable pigment, (ii) subjecting the soft film to curved magnetic fields, thereby orientating the pigment in curved configurations, and (iii) hardening the film, and reference points on the surface of the film, such reference points being printing on the top surface of the film, writing on the top surface of the film, splattering of paint or dusting of paint on the top surface of the film, topcoat containing visible particles on the top surface of the film, visible particles in the film, visible particles on the film or combinations of the foregoing.

3,853,677

ROLL MADE OF NON-WOVEN CLOTH

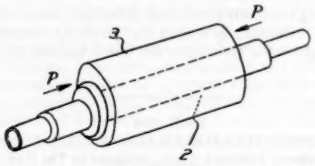
Motoshi Kai, Kyoto, Japan, assignor to Toho Yogyo Co., Ltd., Kyoto-shi, Japan

Filed Jan. 2, 1973, Ser. No. 320,305

Claims priority, application Japan, Jan. 24, 1972, 47-009288

Int. Cl. B21b *31/08*

U.S. Cl. 161—36 2 Claims



1. In a roll comprising a shaft having an axis and a plurality of annular disc elements of a non-woven fabric, the fabric consisting of yarns of fibers of a high molecular synthetic resin material and of natural fibers, and a resinous material binding the yarns together, the elements being stacked on the shaft and axially pressed together to form the roll, the improvement comprising the elements being heat treated and axially pressed together so that the roll has a Poisson's ratio of about 0.5 and a shearing stress of about 1,200 kg/cm².

3,853,678

Patent Not Issued For This Number

3,853,679

PLANAR WOODEN BODY ADAPTED TO SHRINK ABOUT ITS CIRCUMFERENCE

Amerigo Ierenzoni, 4733 Windermere Ct., Apt. 101, Virginia Beach, Va. 23455

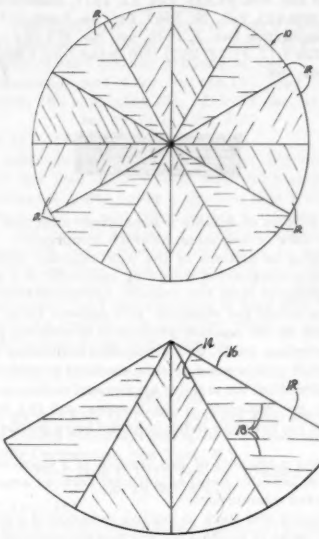
Filed Apr. 1, 1974, Ser. No. 456,758

Int. Cl. B32b *5/12, 21/13;* B27m *3/18*

U.S. Cl. 161—56 2 Claims

1. A planar wooden body adapted to shrink about its circumference comprising:

a plurality of contiguous blocks of wood having congruent geometric configurations, each block being provided with a planar face and characterized by at least a pair of side edge surfaces coincident with a pair of intersecting planes normally related to the plane of the face and a longitudinal axis of symmetry extended from the intersection of



said pair of planes at an angle of substantially 45 degrees with respect to the direction of the grain of the wood, said plurality of blocks being adhered together by films of adhesive disposed between said side edge surfaces.

3,853,680

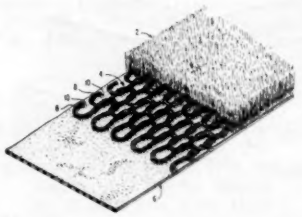
PILE FACED UPHOLSTERY FABRIC

William C. Daniel, Elkhorn, Wis., assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Oct. 29, 1971, Ser. No. 193,958

Int. Cl. D03d *27/00*

U.S. Cl. 161—67 9 Claims



1. A pile faced upholstery material for molded furniture having curves about which the material must be drawn, said material comprising a sliver knit pile fabric having in each stitch both stretch and inelastic body yarns.

3,853,681
LAMINATED HONEYCOMB STRUCTURE AND METHOD OF MAKING SAME

Clifton L. Kehr, Silver Spring; Walter R. Wszolek, Sykesville, and Christian B. Lundsager, Ashton, all of Md., assignors to W. R. Grace & Co., New York, N.Y.

Division of Ser. Nos. 94,535, Oct. 13, 1971, abandoned, and Ser. No. 800,923, Feb. 20, 1969, Pat. No. 3,660,217. This application Dec. 2, 1970, Ser. No. 372,702

Int. Cl. B32b *3/12, 31/28;* **B01j** *1/10;* **B31d** *3/02;* **C08g** *23/00*

U.S. Cl. 161—68 **3 Claims**

1. The process of making a honeycomb structure from a laminated stack of web material which comprises

A. applying to sections of the web material, lines of an adhesive composition consisting essentially of a polyene containing at least two reactive unsaturated carbon to carbon bonds per molecule, said polyene being the triacrylate of the reaction product of trimethylol propane and ethylene oxide, and a polythiol containing at least two thiol groups per molecule, the total combined functionality of (a) the reactive unsaturated carbon to carbon bonds per molecule in the polyene and (b) the thiol groups per molecule in the polythiol being greater than 4;

B. forming a plurality of said sections in a stack with said lines of adhesive between adjacent sections arranged in staggered relationship;

C. subjecting said stack to ionizing radiation at a dose rate in the range of 0.00001 to 10.0 megarads/second to cure the adhesive and bond said sections and

D. expanding said stack to form a honeycomb structure having a plurality of hollow cells.

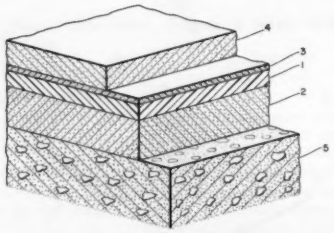
3,853,682
WATERPROOFED CONCRETE STRUCTURE

John Hurst, London, England, assignor to Grace, W. R. & Co., Cambridge, Mass.

Continuation-in-part of Ser. No. 803,438, Feb. 28, 1969, Pat. No. 3,741,856, which is a continuation-in-part of Ser. No. 676,652, Oct. 19, 1967, abandoned. This application Sept. 22, 1972, Ser. No. 291,491The portion of the term of this patent subsequent to June 26, 1990, has been disclaimed.

Int. Cl. B32b *11/02*

U.S. Cl. 161—92 **11 Claims**



1. In combination (a) a structure comprising a flexible sheet-like support, on one side of the support a layer of bituminous composition comprising a mixture of a bitumen and wax, wherein the ratio by weight of bitumen to wax is from about 1 to 10 parts bitumen per part of wax, and on the other side of the support a waterproof pressure-sensitive adhesive membrane formed of a bituminous rubber composition at least 0.025 cm thick which is a blend of a rubber selected from the grouping consisting of a natural rubber, synthetic rubber, or combinations thereof, with a bitumen, the ratio by weight of said bitumen to said rubber being greater than 80:20; (b) a concrete surface to which the face of said pressure-sensitive membrane is adherent; and (c) a layer of load bearing, hot poured asphaltic concrete deposited over the adherent to the bitumen-wax layer.

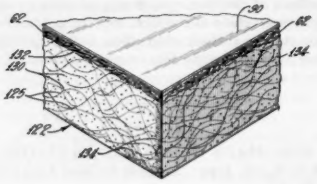
3,853,683
ROOFING BOARD OF FIBROUS GLASS

Stuart H. Stapleford, Atlanta, Ga., and Charles E. Nutter, Hebron, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 1, 1969, Ser. No. 812,170

Int. Cl. B32b *3/00*

U.S. Cl. 161—141 **5 Claims**



1. A porous, generally highly air permeated, thermal insulating, bonded glass roofing board at least one inch in thickness having a preformed, comparatively solid and rigid surfacing sheet attached thereto, said sheet being composed of a blend of asphalt and a polymeric elastomer and being reinforced with fibrous glass embedded therein, and said roofing board having randomly positioned, individual, non-continuous glass fibers extending in spaced and resinously bonded relation throughout the full area of the board beneath the surfacing sheet.

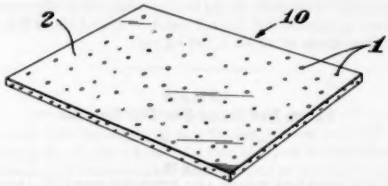
3,853,684
FOAM COMPOSITES FOR FILLING ENCLOSED SPACES

Louis C. Rubens, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 75,758, Sept. 25, 1970, Pat. No. 3,806,566. This application May 21, 1973, Ser. No. 362,559

Int. Cl. B32b *5/16;* **B29d** *27/00*

U.S. Cl. 161—160 **5 Claims**



1. A cellular adherent composite comprising no more than 50 percent by weight of particles of an expanded synthetic resinous material substantially uniformly dispersed in a solid or semi-solid mastic binder, said binder capable of flowing uniformly upon the application of between 75°C. and 200°C. heat, said resinous material being resistant to thermocollapse after expansion when heated, at least during the time and temperature range required to flow said binder.

3,853,685

OPEN-CELL RIGID FOAM PLASTIC

Edmund Friedrich, Rheinheim, Germany; Josef Mosele, Biberist, Switzerland; Rolf Schaumann, Wurenlos, Switzerland, and Manfred Vogelmann, Villigen, Switzerland, assignors to Brown Boveri & Company Limited, Baden, Switzerland

Filed July 9, 1973, Ser. No. 377,222

Claims priority, application Switzerland, July 24, 1972, 10990/72

Int. Cl. B32b *3/26*

U.S. Cl. 161—161 15 Claims

1. The method of manufacturing an open-cell rigid foam which comprises the steps of evacuating the foamed structure in an autoclave, filling the evacuated foamed structure under pressure with a dielectric in gaseous or liquid form and sealing said dielectric filled foamed structure by means of thermosetting polymers.

3,853,686

POLYVINYL ACETATE RESIN IMPREGNATED PLASTIC LAMINATE AND PROCESS THEREFOR

William H. Clendenin, Cochocton, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 19, 1972, Ser. No. 316,577

Int. Cl. C09j *7/02*

U.S. Cl. 161—167 3 Claims

1. A resin impregnated plastic laminate which is readily adherable to a substrate without sanding, the adhering surface of said laminate being a paper sheet which during its preparation and before layup and consolidation into the laminate is treated immediately after resin impregnation and before drying with essentially a mixture of by weight, about 65 to 80 percent polyvinyl acetate-ethylene copolymer emulsion and about 35 to 20 percent of a dispersion of vinyl acetate homopolymer, said treated paper sheet being also non-blocking.

3. The process of making the resin impregnated laminate which is non-blocking and readily adherable without sanding to a substrate which process comprises treating the adhering paper sheet before layup and consolidation into a laminate and immediately after resin impregnation and before drying with essentially a mixture of by weight about 65 to 80 percent polyvinyl acetate ethylene copolymer emulsion and about 35 to 20 percent of a dispersion of vinyl acetate homopolymer.

3,853,687

MODIFIED SYNTHETIC FIBERS AND A PROCESS FOR THE MANUFACTURE OF SAME

Tatsuo Ishikawa; Keiji Yamashita; Norio Okubo; Masahira Sakashita; Arimichi Okamoto, and Tetsuhiro Kusunose, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Dec. 27, 1971, Ser. No. 212,044

Claims priority, application Japan, Dec. 24, 1970, 45-116657; Dec. 24, 1970, 45-116658

Int. Cl. D02g *3/36*

U.S. Cl. 161—178 4 Claims

1. A synthetic fiber comprising a core portion and a sheath portion with an interface between said core and said sheath which is characterized by extruded extreme irregular undulations which vary in cross-section along the entire length of the fiber, wherein said core has been removed, leaving a hollow sheath with said extreme irregular undulations on the internal surface thereof.

3,853,688

CONTINUOUS FILAMENTS AND YARNS

Birino D'Ambrosio, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 156,111, June 23, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 332,028

Int. Cl. D02g *3/00, 3/22*

U.S. Cl. 161—178 9 Claims

1. A continuous polycrystalline alumina filament having a diameter less than about 0.0008 inch which contains randomly oriented grains having a size less than 2 microns, at least about 90% of said grains having a size less than 0.5 micron; said filament having a porosity of between about 2 and about 10% and containing pores having an average volume each of less than 600,000 cubic angstroms, with at least 60% of the pores each having a volume of less than 500,000 cubic angstroms; said filament being at least 80% by weight Al_2O_3 with the predominant crystalline phase, as detected by X-ray diffraction, being alpha alumina.

3,853,689

SAG RESISTANT GYPSUM BOARD AND METHOD

Nicholas Francis Morrone, Flemington, N.J., assignor to Johns-Manville Corporation, New York, N.Y.

Filed June 1, 1972, Ser. No. 258,685

Int. Cl. B32b *9/06*

U.S. Cl. 161—182 3 Claims

1. A gypsum board comprising a core of set gypsum having incorporated therein polyvinyl alcohol in an amount of from approximately 0.15 to about 0.40 percent by weight of the gypsum in the core whereby to improve the sag resistance of the board, and a pair of paper cover sheets with one cover sheet adhered to each face of the core of set gypsum.

3,853,690

METAL SUBSTRATES BONDED WITH THERMOSETTING RESIN COMPOSITIONS CONTAINING FIBRILLATED POLYTETRAFLUOROETHYLENE

Frederick Jerome McGarry, Weston, Mass., and Tzeng Jiueq Suen, New Canaan, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed June 23, 1972, Ser. No. 265,848

Int. Cl. B32b *27/06;* C09j *3/14*

U.S. Cl. 161—189 8 Claims

1. A structural article of manufacture comprising at least two metal substrates bonded together with an adhesive consisting essentially of a mixture of (1) a thermosetting resin and (2) from about 1% to about 40%, by weight, based on the weight of (1), of fibrillated polytetrafluoroethylene.

3,853,691

COPPER-PLASTIC LAMINATE

Elmer J. Caule, New Haven, Conn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 147,673, May 27, 1971,. This application Aug. 28, 1972, Ser. No. 284,433

Int. Cl. B32b *9/04, 15/04, 15/20*

U.S. Cl. 161—191 5 Claims

1. A tarnish resistant copper - plastic laminate having high bond strength, said copper being selected from the group consisting of copper and copper alloys and having on the surface thereof a uniform glassy like and substantially pore free coating consisting essentially of copper phosphate ranging in thickness from 20 to 1,000 Angstrom Units, wherein said copper has adhesively bonded thereto a plastic material

selected from the group consisting of a polyimide and a polyester, and wherein the surface bonded to said plastic is in the roughened condition.

3,853,692

RUBBER BONDED TO SILICEOUS SURFACES

Robert E. Clayton, Westfield, and Byron M. Vanderbilt, Scotch Plains, both of N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 392,027, Aug. 25, 1964, , which is a continuation-in-part of Ser. No. 120,911, June 30, 1961, abandoned, and Ser. No. 138,420, Sept. 15, 1961, abandoned, which is a continuation-in-part of Ser. No. 30,089, May 19, 1960, abandoned. This application Aug. 26, 1968, Ser. No. 755,425

Int. Cl. B32b *17/10*

U.S. Cl. 161—193 **21 Claims**

1. A process for preparing a rubber-reinforcing article which comprises, in combination, the steps of:

a. treating the surface of glass fibers with a liquid composition containing a silane selected from the group consisting of a saturated silane, its corresponding silanol, its corresponding siloxane, and mixtures thereof, said silane having the general formula:

$$Y - R_1 - \overset{R_2}{\underset{R_3}{Si}} - X$$

wherein Y is selected from the group consisting of mercapto and epoxy; R_1 is selected from the group consisting of C_3 to C_{16} alkylene, isoalkylene, and cycloalkylene, each of from 2 to 16 carbon atoms; X is selected from the group consisting of halogen, hydroxyl, alkoxy, and acyloxy; and R_2 and R_3 are independently selected from the group consisting of Y-R_1—, X—, and methyl;

b. contacting the treated surface of the reinforcing agent obtained in step (a) with a liquid composition containing an elastomer in an uncured stage; and

c. drying the resultant product from step (b) until it is substantially free of any diluent or solvent thereby obtaining a reinforcing agent whose surfaces have been substantially coated with about 10 to 60 wt. %, based on the total weight of the elastomer-coated reinforcing agent, of said elastomer.

3,853,693

METHOD FOR QUENCHING GLASS LAMINATES

John Edward Priddle, Welwyn, and Ronald William Richardson, Bishops Stortford, both of England, assignors to Imperical Chemical Industries Limited, London, England

Filed Aug. 14, 1972, Ser. No. 280,199

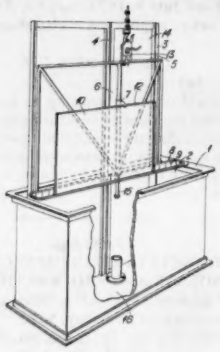
Claims priority, application Great Britain, Aug. 31, 1971, 40533/71

Int. Cl. B32b *17/10*

U.S. Cl. 161—203 **6 Claims**

1. In a method of making a bonded glass laminate wherein one or more layers of crystallisable thermoplastic adhesive are sandwiched between sheets of glass and the resulting laminate is heated to a temperature above the melting point of the adhesive and the laminate is thereafter quenched by immersing it in a volume of water, the improvement which comprises:

a. immersing the laminate in the volume of cooling liquid by allowing the laminate to fall edgewise into the water main-



tained at a temperature of from about 30° to 60°C, and

b. subsequently subjecting the falling laminate to a retarding force so as to prevent the laminate from sustaining damage by impact.

3,853,694

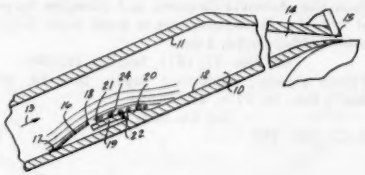
PAPER MACHINE FLOW CHANNEL WITH A FLEXIBLE PLATE PROJECTING INTO THE FLOW STREAM TO ACT AS AN OSCILLATOR

Joseph D. Parker, deceased, late of Roscoe, Ill. (by Dorothy C. Parker, executrix), assignor to Beloit Corporation, Beloit, Wis.

Filed Apr. 24, 1973, Ser. No. 354,110

Int. Cl. D21f *1/02*

U.S. Cl. 162—216 **10 Claims**



1. A mechanism for generating turbulence in a fiber stock flow stream for improved dispersion comprising in combination:

a flow chamber through which a stream of fiber containing stock flows having a wall member and extending in the direction of flow;

a flexible plate extending away from the wall member in a downstream direction and cantileverly mounted on the wall at the upstream edge of the plate with the downstream edge spaced from the wall member in an unstressed position so that its downstream edge will flex and vibrate with flow of stock along said wall member.

3,853,695

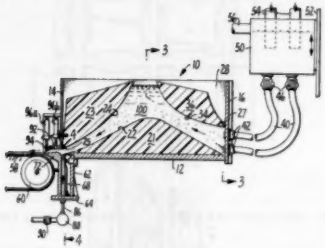
ENTRAINING A LIQUID INTO A FIBER SLURRY TO ACCELERATE IT PRIOR TO DISCHARGE FROM A FLOW PATH ONTO A FORMING WIRE

Sangho E. Back, 9811 S.E. 12th St., Vancouver, Wash. 98664; Imants Reba, 6502 Montana Ln., Vancouver, Wash. 98661, and Darrel L. Wilhoit, Rt. 2, Box 265, Washougal, Wash. 98671

Continuation of Ser. No. 297,094, Oct. 12, 1972, abandoned. This application Jan. 28, 1974, Ser. No. 437,112

Int. Cl. D21f *1/02, 1/06*

U.S. Cl. 162—216 **24 Claims**



23. A method for delivering a slurry to the forming surface of a sheet- or web-forming machine, comprising the steps of: introducing a slurry mixture into a predetermined flow path leading toward an exit aperture disposed adjacent to said forming surface;

introducing an entraining fluid into said flow path under pressure in the form of a thin, elongated stream; and

directing the flow of said fluid toward said exit aperture by attaching said thin, elongated stream of fluid due to the Coanda effect to a convex, generally curved fluid-flow attachment surface leading from the location of introduction of said slurry toward said exit aperture whereby said slurry is pulled toward said exit aperture by a substantial pulling force exerted by said fluid to provide a high percentage of all energy required to accelerate said slurry.

3,853,696

VERTICAL TYPE PAPER MACHINE

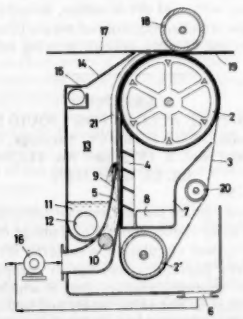
Hatsuo Uchiyama, Shizuoka, Japan, assignor to Maruishi Iron Works Co., Ltd., Shizuoka, Japan

Filed June 4, 1973, Ser. No. 366,860

Claims priority, application Japan, June 26, 1972, 47-63869

Int. Cl. D21f *1/00*

U.S. Cl. 162—315 **1 Claim**



1. A vertical type papermaking machine comprising in combination, a pair of rolls rotatably disposed axially parallel and one vertically above the other, a wire cloth supported under tension about said rolls, a portion of said wire cloth being disposed vertically for movement from the lower roll upwardly to the upper roll, a paper layer forming chamber defined by said vertically disposed wire cloth portion and surrounding enclosing walls, said paper layer forming chamber being continuously maintained at higher than atmospheric pressure by compressed air supplied thereto, said surrounding enclosing walls being substantially air-tight by sealing means disposed along edges of said wire cloth, means for supplying paper slurry onto a lower portion of the vertically disposed portion of wire cloth, said paper slurry forming a paper layer by means of higher than atmospheric air in the paper layer forming chamber passing through the vertically disposed wire cloth above said lower portion, and means for removing the paper layer from the wire cloth at said upper roll.

3,853,697

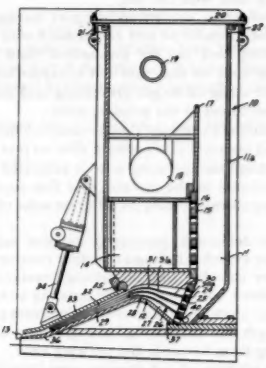
PAPERMAKING MACHINE HEADBOX WITH AN UPWARDLY INCLINED SLICE CHAMBER PORTION, AN ARCUATE PORTION, AND A DOWNWARDLY INCLINED PORTION AND CONTAINING FLEXIBLE TRAILING MEMBERS

Joseph D. Parker, deceased, late of Roscoe, Ill. (by Dorothy C. Parker, executrix); Richard E. Hergert, Rockton, Ill., and Richard W. Eggen, Orfordville, Wis., assignors to Beloit Corporation, Beloit, Wis.

Filed Mar. 8, 1973, Ser. No. 339,219

Int. Cl. D21f *1/02*

U.S. Cl. 162—343 **11 Claims**



1. In a headbox for delivering stock to a forming surface, the headbox having a chamber leading to a slice chamber with a slice opening, the improvement comprising:

top and bottom slice walls defining a slice chamber therebetween with the slice chamber having a first upwardly inclined portion, a second arcuate portion leading upwardly and then downwardly, and a third tapered portion leading to the opening;

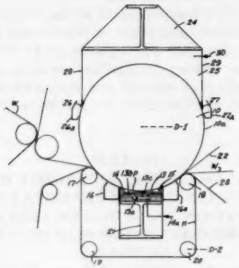
thin planar continuous cross-machine extending trailing elements having a rigid planar portion anchored at their upstream ends in said first portion of the slice chamber, a nonflexible portion curved in the direction of said second portion and located therein, and a third portion in the tapered chamber being flexible with the downstream ends unattached and constructed to be self-positionable as to be solely responsive to forces exerted thereon by the stock flowing toward the slice opening;

and support means in said first portion of the headbox with the upstream ends of the trailing elements anchored thereto.

3,853,698
LARGE ROLL HYDRAULIC PRESS WITH PRESSURIZED FLUID SUPPORTS

William C. Mohr, Rockford, Ill., assignor to Beloit Corporation, Beloit, Wis.

Filed Apr. 17, 1972, Ser. No. 244,638
Int. Cl. D21f 3/06
U.S. Cl. 162—358 7 Claims



1. A press structure for performing a dewatering operation on a traveling web in the steps of the formation of the web comprising in combination,

a rotatable roll having a cylindrical outer pressing surface,

a fluid impervious belt wrapping a portion of the circumferential surface of the roll forming an arcuate elongate pressing zone with the roll,

a first deflection preventing support having a chamber positioned outside of and coextensive with said roll and supporting said roll on pressurized fluid opposite the pressing zone so that said roll is supported by uniform pressure along its length preventing said roll from bending from forces in the pressing zone,

means defining a confined fluid pressure chamber facing the belt and opposite said pressing zone so that a web traveling through said pressing zone is subjected to a pressing force normal to the surface, said first support and said pressure chamber being on different sides of said pressing zone,

a second deflection preventing support supporting said pressure chamber having a chamber coextensive with said pressure chamber supporting said pressure chamber on pressurized fluid opposite the pressing zone so that said pressure chamber is supported by uniform pressure along its length for preventing said pressure chamber from bending from forces in the pressing zone,

means in advance of said pressing zone for guiding said belt and web onto said roll surface,

means positioned after said pressing zone for guiding the web and belt away from said roll surface,

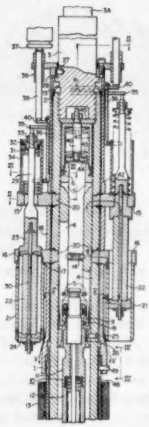
and means in said pressing zone receiving the water pressed from said web.

3,853,699
NUCLEAR REACTOR HAVING CONTROL-ROD RETAINING MEANS

Erling Frisch, Pittsburgh, and Harry N. Andrews, Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 53,201, July 8, 1970,. This application Sept. 13, 1971, Ser. No. 180,050
Int. Cl. G21c 7/12, 7/18
U.S. Cl. 176—36 R 10 Claims

1. In a nuclear reactor of the type designed for rapid refueling comprising: a closed pressure vessel, a plurality of upstanding elongated fuel assemblies containing nuclear fuel located in said vessel, at least some of said fuel assemblies including elongated openings extending longitudinally therethrough, a plurality of elongated movable neutron-absorbing control rod means positioned in said openings respectively for movement into and out of said some fuel assemblies, a plurality of control rod drive mechanisms supported on said vessel and each including drive means secured to each of said control rods, respectively, each of said mechanisms including operating means for individually and incrementally moving said associated drive means and associated control rod means to a plurality of holding positions between first and second extreme positions, said first extreme position being with said associated control rod means fully inserted in its associated fuel assembly, said second extreme position being with said associated control rod means being fully withdrawn from said associated fuel assembly, latching means in each of said mechanisms which mechanically engages the drive means only when said associated control rod means is in said second extreme position to hold said control rod means in said withdrawn position, actuating means mounted on each mechanism, one for each of said latching means for selectively actuating each of said latching means into engagement with said associated drive means; and selectively operable movable means mounted on each of said mechanisms, said movable means being coupled with said actuating means to permit movement of said actuating means longitudinally of said mechanism and into a position to actuate said latching means into engagment with said drive means, thereby holding said drive means and attached control rod means in said withdrawn position during the time the reactor is being refueled.



3,853,700
CARBON-TRAP ALLOYS FOR LIQUID SODIUM

Joseph S. Armijo, 19310 Portos Ct., Saratoga, Calif. 95070

Filed Nov. 2, 1973, Ser. No. 412,395
Int. Cl. G21c 15/02
U.S. Cl. 176—38 4 Claims

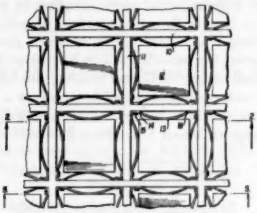
1. In a sodium cooled nuclear reactor containing austenitic stainless steel components subject to damage due to carburization during sodium circulation, a material for trapping carbon and thereby preventing damage to components due to carburization comprising a binary alloy in which carbon diffusion is faster than in austenitic steels and which contains an active carbide former, said binary alloy consisting essentially of Fe and a second element selected from the group consisting of 0.5 to 30 wt.% Ti, 0.5 to 25 wt.% V, and 0.5 to 5 wt.% Mn.

3,853,701

NUCLEAR REACTOR CORE ASSEMBLY

Youichi Sasaki, and Hisao Tomita, both of Yokohama, Japan, assignors to Tokyo Shibaura Electric Company Ltd., Kanagawa-ken, Japan

Filed Dec. 28, 1971, Ser. No. 213,049
Claims priority, application Japan, Dec. 28, 1970, 45-120353; Feb. 23, 1970, 45-132802
Int. Cl. G21c 3/30, 3/34
U.S. Cl. 176—50 3 Claims



1. A fluid cooled nuclear reactor core structure, comprising:

a plurality of substantially parallel, elongated fuel bundles each having a plurality of substantially parallel, elongated fuel rods encased therein;

a bottom grid structure positioned transverse to said fuel bundles having supporting means for engaging the bottom ends of each of said fuel bundles and means for inserting control rods therethrough;

a top grid structure positioned transverse to said fuel bundles formed by a plurality of intersecting frames members which form a plurality of framework openings each having a plurality of substantially flat side surfaces which face and support the upper portion of said fuel bundles, each one of said fuel bundles extending through and being supported within a separate one of said openings; and

a plurality of leaf springs, each one of which is secured to each of said side surfaces of said framework openings which faces said upper portion of said fuel bundles for resiliently supporting said fuel bundles in a transverse direction.

3,853,702

PRESSURE VESSEL PENETRATION TECHNIQUE

Frank Bevilacqua, Windsor, and Malcolm D. Groves, Simsbury, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 23, 1971, Ser. No. 211,286
Int. Cl. G21c
U.S. Cl. 176—87 8 Claims

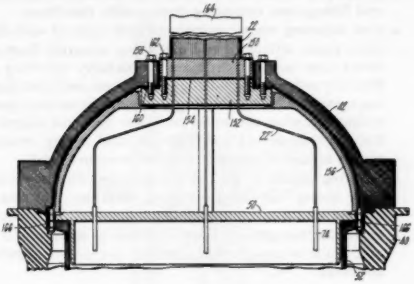
1. Apparatus for transmitting a plurality of fluidic signals through the nuclear reactor removable head of a pressure vessel, said removable head having an aperture therein said transmitting apparatus comprising:

inner flange means, said inner flange means having a plurality of passages therethrough, said inner flange means having a shape commensurate with and a maximum size in excess of the respective shape and size of the pressure head aperture;

means mounting said inner flange means to the interior of the vessel head whereby said inner flange means cover the head aperture;

apertured support means mounted internally of the pressure vessel, said support means having a shoulder about the aperture therein, said shoulder engaging said inner flange means about its peripery and supporting said inner flange means when said mounting means are removed;

outer flange means, said outer flange means having a plurality of passages therethrough, the passages in said outer flange means defining a pattern commensurate with the pattern of passages in the inner flange means, said outer flange means having a size and shape complementary to the size and shape of the pressure vessel head aperture whereby said outer flange means will be received in said aperture; and



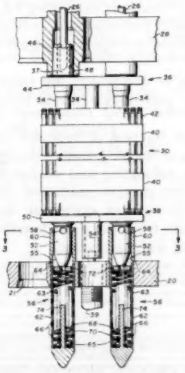
means attaching said outer flange means to said inner flange means with the passages in said flange means aligned whereby communication between the interior and exterior of the pressure vessel is provided by said aligned passages.

3,853,703

FUEL ASSEMBLY HOLD-UP DEVICE

Andrew James Anthony, Tariffville; John Jefferson Hutchinson, Windsor, and Ralph Howard Klumb, Simsbury, all of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed July 3, 1972, Ser. No. 268,347
Int. Cl. G21c 3/00
U.S. Cl. 176—87 4 Claims



1. In a nuclear reactor core,

means defining lower core support structure;

means defining upper core alignment structure;

a plurality of fuel assemblies vertically disposed between said lower core support structure and said upper core alignment structure, each of said assemblies comprising an upper end fitting, a lower end fitting, structural means attached to each of said end fittings and supporting said fittings in parallel spaced relationship, a plurality of elongated fuel elements disposed in a generally parallel array, and support structures connected to said structural means

and receiving therein said fuel elements to maintain them in a vertically extending position between said end fittings;

means associated with said upper core alignment structure and said upper end fittings for laterally restraining each of said fuel assemblies while allowing limited axial movement thereof:

a plurality of alignment posts affixed to each of said lower end fittings and extending downwardly therefrom;

a post engaging means, associated with each of said alignment posts, affixed to and extending upwardly from said lower core support structure for slidably receiving and laterally restraining said alignment posts, said post engaging means including a spring containment section having spring retaining means at its lower end and means for transmitting downward force on said spring retaining means to said lower core support structure; and

coil spring means in partial compression disposed within said spring receiving section, reacting downwardly against said lower core support structure and reacting upwardly through said lower end fittings to urge said fuel assemblies in engagement with said upper core alignment structure.

3,853,704

CULTIVATION OF MICRO-ORGANISMS ON A FEEDSTOCK CONSISTING AT LEAST IN PART OF STRAIGHT CHAIN HYDROCARBONS

Alfred Champagnat, Courbevoise, and Bernard Maurice Laine, Lavern, both of France, assignors to The British Petroleum Company Limited, London, England

Continuation of Ser. No. 69,473, Sept. 3, 1970, abandoned. This application May 21, 1973, Ser. No. 362,050

Int. Cl. C12b *1/00*; C12d *13/06*

U.S. Cl. 195—28 R **19 Claims**

1. A process which comprises cultivating a straight chain paraffinic hydrocarbon consuming yeast in the presence of a feedstock consisting at least in part of a straight chain hydrocarbon, recovering a fraction comprising the yeast and at least some aqueous medium and residual hydrocarbon, mixing said fraction with surface active agent and treating the mixture to recover.

a. a washed fraction comprising the yeast together with an aqueous phase and some residual hydrocarbon fraction and

b. a hydrocarbon fraction of reduced content of straight chain paraffins or which is free of straight chain paraffins and thereafter, subjecting said washed fraction to drying, recovering a dry impure yeast and subjecting said dry impure yeast to solvent extraction for at least partial removal of lipids from the yeast together with hydrocarbons associated with said yeast.

3,853,705

ENZYMATIC PRODUCTION OF CEPHALOTHIN

Tadashiro Fujii, and Yuzo Shibuya, both of Shizuoka-ken, Japan, assignors to Toyo Jozo Kabushiki Kaisha, Yoshida Shizuoka-ken, Japan

Filed Aug. 14, 1973, Ser. No. 388,150

Claims priority, application Japan, Aug. 22, 1972, 47-84280

Int. Cl. C12d *9/00*

U.S. Cl. 195—30 **6 Claims**

1. A process for the production of cephalothin, which comprises reacting 7-amino cephalosporanic acid with 2-thienyl acetic acid ester in an aqueous medium in the presence of an amino group acylating enzyme for 7-ACA derived from *Bacillus megaterium* NRRL B-5385.

3,853,706

PROCESS FOR PRODUCING NON-WAXY STARCH HYDROLYSATES

Frederick Carl Armbruster, Lagrange, Ill., assignor to CPC International Inc., Englewood Cliffs, N.J.

Continuation-in-part of Ser. No. 626,952, March 30, 1967, abandoned. This application Jan. 18, 1971, Ser. No. 107,436

Int. Cl. C12b *1/00*

U.S. Cl. 195—31 R **17 Claims**

1. A process for producing a non-waxy starch hydrolysate which comprises treating an aqueous slurry of a non-waxy cereal starch with bacterial alpha-amylase at a temperature below 95°C to liquefy the starch and to provide a starch hydrolysate having a D.E. within the range of about from 2 to about 15, heating the liquefied starch hydrolysate to a temperature of at least about 95°C and treating the liquefied starch hydrolysate with bacterial alpha-amylase at a temperature below 85°C to produce a starch hydrolysate having a D.E. within the range of about 5 to about 20.

3,853,707

METHOD FOR PRODUCING HEXANOR-5,9-SECO-PREGNAN-5-OIC ACID

Elisabeth Becher, Basel; Arno Johannes Schocher, Benken, and Erich Widmer, Arlesheim, all of Switzerland, assignors to Hoffmann-LaRoche Inc., Nutley, N.J.

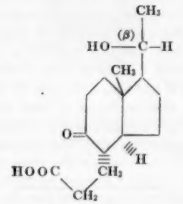
Filed Aug. 16, 1973, Ser. No. 389,041

Claims priority, application Switzerland, Aug. 31, 1972, 12838/72

Int. Cl. C12d *1/02*

U.S. Cl. 195—51 R **4 Claims**

1. A process for the manufacture of 20beta-hydroxy-9-oxo-1,2,3,4,10,19-hexanor-5,9-seco-pregnan-5-oic acid of the formula:



which process comprises fermenting 3beta,20beta-dihydroxypregn-5-ene or 20beta-hydroxy-pregn-4-en-3-one with Mycobacterium phlei ATCC 19249 adapted to aliphatic hydrocarbons in a nutrient medium containing an assimilable nitrogen and an assimilable carbon source.

3,853,708

COUPLING BIOLOGICALLY ACTIVE SUBSTANCES TO OXIRANE-CONTAINING POLYMERS

Jerker Olof Porath; Nermin Fornstedt; Lars Sundberg; Conny Eklund, all of Uppsala, and Rolf Axen, Upplands Balinge, all of Sweden, assignors to Exploaterings Aktiebolaget T.B.F., Uppsala, Sweden

Continuation-in-part of Ser. No. 106,548, Jan. 14, 1971, abandoned. This application Jan. 14, 1974, Ser. No. 433,245

Claims priority, application Sweden, Jan. 23, 1970, 843/70

Int. Cl. C07g *7/02*

U.S. Cl. 195—68 **9 Claims**

1. A method for coupling with covalent bonds a water-insoluble polysaccharide gel and an enzyme or a proteinaceous enzyme inhibitor, comprising the steps of introducing an eponide group-containing bifunctional compound selected from the class consisting of epihalohydrin and bisoxirane in

the insoluble polysaccharide gel in an alkaline medium by reacting said compound with hydroxy groups of said polysaccharide gel, separating excess said bifunctional compound from said insoluble polysaccharide gel, and contacting the latter with said enzyme or enzyme inhibitor to chemically couple said enzyme or enzyme inhibitor to said polysaccharide gel by reacting a functional group of the enzyme or enzyme inhibitor with epoxide groups of said polysaccharide gel whereby said enzyme or enzyme inhibitor retains its ability to form complexes with natural substances having affinity for said enzyme or enzyme inhibitor in its free form and retains its activity almost completely.

3,853,709

PROCESS FOR PREPARING NEBRAMYCIN FACTORS II AND VII

William Max Stark, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 83,834, Oct. 26, 1970, abandoned. This application Dec. 8, 1972, Ser. No. 313,222

Int. Cl. C12d *9/00*

U.S. Cl. 195—80 R **3 Claims**

1. The process for producing nebramycin II and nebramycin VII which comprises cultivating *Streptomyces tenebrarius* NRRL 3816, mutant strain ex *Streptomyces tenebrarius* ATCC 17920 in an aqueous nutrient culture medium containing assimilable sources of carbon, nitrogen and inorganic salts under submerged aerobic fermentation conditions until a substantial amount of antibiotic activity is produced by said organism in said culture medium.

3,853,710

SERUM DIAGNOSTIC TEST FOR MALADIES CAUSING CHANGE IN FIBRINOLYTIC ACTIVITY IN THE BLOOD

Irving Innerfield, Tenafly, N.J., assignor to Association For Pharmacologic Research, Inc., New York, N.Y.

Filed Jan. 15, 1973, Ser. No. 323,485

Int. Cl. G01n *31/14, 31/16*

U.S. Cl. 195—99 **11 Claims**

1. A method of detecting an abnormal concentration of fibrinolytic enzymes and FDP in the blood of an individual, comprising the steps of determining the range of clotting times of standardized saline solutions of buffered thrombin, fibrinogen and mixed serum from healthy subjects combined in suitable proportions at a selected temperature, and determining the individual clotting time at the same selected temperature of the same standardized saline solutions of buffered thrombin and fibrinogen with a serum specimen from said individual combined in said suitable proportions, an individual clotting time outside said range being taken as indicative of an abnormal concentration of fibrinolytic enzymes and fibrinogen decomposition products in the blood and certain characteristic pathologic states.

3,853,711

INSTALLATION FOR AUTOMATION OF MICROBIOLOGICAL WORK TECHNIQUES

Carl Goran Heden, Solna, Sweden, assignor to Ab Biotec, Stockholm, Sweden

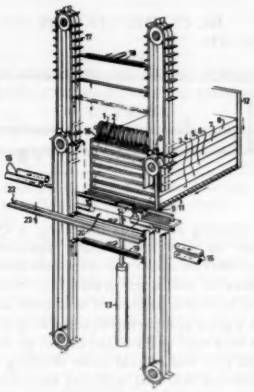
Filed June 15, 1971, Ser. No. 153,286

Claims priority, application Sweden, June 22, 1970, 8592/70; June 4, 1971, 7264/71

Int. Cl. C12b *1/24*

U.S. Cl. 195—127 **25 Claims**

1. Apparatus for automatic performance of microbiological analyses of samples applied to a gel substrate layer, comprising a gel substrate preparation station, an inoculating station, an incubating station, a reading station capable of detecting microbiol growth, and conveyor means, said gel substrate preparation station comprising a solid block of said gel having a generally uniform elongated rectangular transverse cross-section with respect to at least one axis, cutter means for slicing successive transverse thin strips of gel from said block, a supply of similar glass strips, each having an area sufficient to provide a support for at least one of said thin sliced strips of gel, said conveyor means including means to relatively



position glass strips with respect to sliced strips of gel for deposit of the slices of gel on successive glass strips at a first position and to move said glass strips in a sequential manner to other said stations after receiving a slice of gel.

3,853,712

CELL CULTURE SYSTEMS

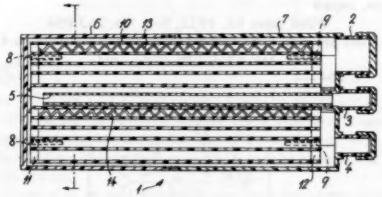
William Cullingford House, Southborough, and Nicholas George Maroudas, London, both of England, assignors to National Research Development Corporation, London, England

Filed Feb. 8, 1972, Ser. No. 224,527

Claims priority, application Great Britain, Feb. 9, 1971, 4266/71; Nov. 4, 1971, 51343/71

Int. Cl. C12b *1/00*

U.S. Cl. 195—127 **14 Claims**



1. Cell culture apparatus comprising a container for culture medium which encloses a compact cell support of a flexible strip material formed into turns which are spaced one from another to provide a continuous passageway through which cells and medium can travel progressively and continuously on rotary movement of the support during inoculation.

3,853,713
METHOD AND APPARATUS FOR PROCESSING GRANULAR AND OTHER MATERIALS

Graham Richard Colclough, Balwyn, Australia, assignor to Phildon Engineering Co. Pty. Ltd., Fitzroy, Victoria, Australia

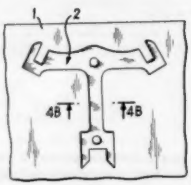
Filed Oct. 2, 1972, Ser. No. 293,798
Claims priority, application Australia, Oct. 5, 1971, 6571/71
Int. Cl. C12c *1/14*; C12b *1/00*
U.S. Cl. 195—131 **10 Claims**

1. Grain treating apparatus including: a cylindrical drum located with its axis substantially horizontal and being mounted for rotation about that axis, said drum having a first end and a second end; a perforated floor member extending the length of at least a portion of said drum and dividing said portion into a grain compartment and a fluid compartment; an end wall at said first end of said drum; an intransverse wall adjacent said first end of said drum defining a grain transfer chamber between said end wall and said internal transverse wall; conveyor means extending through said end wall and said internal transverse wall; drive means connected to said conveyor means and operable to move said conveyor means in either a grain feeding or a grain discharging direction; a feed opening associated with said grain compartment whereby grain is fed to said grain compartment from said conveyor means during movement thereof in said grain feeding direction; a controllable opening in said transverse wall section whereby grain is passed to said conveyor means through said grain transfer compartment during movement of said conveyor means and said grain discharge direction; separate air inlet and outlet openings associated with said second end of said drum, located remote from said grain transfer member; inlet duct means and outlet duct means connectable to said inlet and outlet openings respectively; and means for connecting said inlet and outlet openings with said fluid and grain compartments respectively.

3,853,714
PROCESS FOR ELECTROFORMING MICROPARTS HAVING HOLLOW INTERIORS

Kazumi Shimada, Tokyo; Hideo Hotoda, Noda; Shizuo Funayama, Tokyo, and Takeshi Yamamoto, Higashi, all of Japan, assignors to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed June 15, 1972, Ser. No. 263,094
Claims priority, application Japan, June 15, 1971, 46-42689
Int. Cl. C23b *7/00*, *7/02*
U.S. Cl. 204—4 **10 Claims**

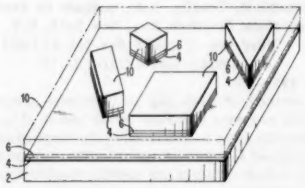


1. A process for electroforming articles such as watch pallet forks and the like having hollow deep-bottomed interiors comprising: forming in a plate of electrically nonconductive material a plurality of mold cavities each having steep side walls terminating at their base in a bottom wall and having a depth to width ratio no greater than 3:1 and having a configuration complementary to that of the exterior of an article to be formed; lining each said mold cavity with a layer of electrically conductive material while leaving the intervening spaces which remain on the plate between the cavities free of electrically conductive material; electrically connecting together each layer of electrically conductive material with a common lead wire which comprises a first electrode; then immersing the plate in an electrolytic solution containing dissolved salts of the metal to be deposited; placing a second electrode in said electrolytic solution; and applying dc electrical energy to said first and second electrodes to obtain a current density less than 5A/dm^2 for a time period sufficient to effect substantially uniform electrodeposition of metallic ions from within said electrolytic solution onto each said layer of electrically conductive material to electroform thereon a hollow article having steep side walls terminating at their base in a bottom wall and having a substantially hollow interior and an external configuration complementary to that of its corresponding mold cavity.

3,853,715
ELIMINATION OF UNDERCUT IN AN ANODICALLY ACTIVE METAL DURING CHEMICAL ETCHING

Lubomyr Taras Romankiw, Briarcliff Manor, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1973, Ser. No. 426,862
Int. Cl. C23b *5/48*
U.S. Cl. 204—15 **8 Claims**



1. A method for fabricating a metallic pattern on a substrate comprising the steps of

a. depositing a first thin metallic layer on an inert substrate,
b. placing a very narrow self-supporting border of a given height of photoresist material on such metallic layer, said border outlining the configuration of subsequent second metal to be deposited on said thin metallic layer, said subsequent second metal becoming anodic with said first metallic layer during its etching,
c. depositing said second metal on said first metal,
d. depositing a photoresist layer only over said anodic material that forms the pattern of interest, and
e. chemically etching away all the anodic material not encapsulated.

3,853,716
ELECTROLYTIC COPPER STAINPROOFING PROCESS

Charles B. Yates, and Adam M. Wolski, both of Edgewater Park, N.J., assignors to Yates Industries, Inc., Bordentown, N.J.

Filed Sept. 8, 1972, Ser. No. 287,437
Int. Cl. C23b *11/00*
U.S. Cl. 204—28 **6 Claims**

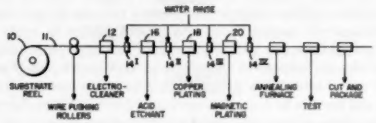
1. An electrolytic process for imparting stain resistance to sheet copper comprising:

1. immersing said copper sheet in an electrolyte comprising an aqueous solution containing hexavalent chromium ion-containing anions, said electrolyte being sufficiently alkaline to cause precipitation of copper and chrome cations; and
2. rendering said copper sheet cathodic to cause reduction of said anions at the surface of said copper sheet.

3,853,717
PLATED WIRE MEMORY

Guy Diguilio, Philadelphia, Pa., assignor to Sperry Rand Corporation, New York, N.Y.

Filed June 29, 1973, Ser. No. 375,266
Int. Cl. C23b *5/58, 5/32*
U.S. Cl. 204—28 **6 Claims**



1. The method of manufacturing an improved plated wire memory device having a smooth wire substrate and a caviar intermediate layer, the improvement comprising the steps of:
a. moving said smooth wire with a caviar intermediate layer continuously through a plating cell;
b. moving an electrolyte through said cell in order to plate a magnetic coating on said caviar layer wherein said electrolyte consists essentially of an aqueous solution of nickel sulfamate, iron sulfamate, cobalt sulfate, boric acid and trisodium salt of napthalene tri-sulfonic acid, and sodium hypophosphite,
the nickel to iron weight ratio in said electrolyte being in the range of 50/1 to 70/1.

3,853,718
METHOD TO IMPROVE ZINC DEPOSITION EMPLOYING MULTI-NITROGEN QUATERNARIES

Hans-Gerhard Creutz, Westland, Mich., assignor to Oxy Metal Finishing Corporation, Warren, Mich.

Filed Jan. 5, 1973, Ser. No. 321,429
Int. Cl. C23b *5/10, 5/46*
U.S. Cl. 204—55 R **42 Claims**

1. An aqueous alkaline zinc electroplating bath comprising alkali metal zincate, and about 0.5 to about 50 grams per liter of a zinc brightening agent in the form of a bath soluble multiple quaternary compound which is the reaction product of a polyalkylene imine having a molecular weight from about 300 to 1,000,000, and an organic quaternary ammonium halide which contains a halogen which will quaternize a nitrogen of the polyalkylene imine in a ratio of one mole of organic ammonium halide to two mole-units of the polyalkylene imine.

3,853,719
PRODUCTION OF AQUEOUS FORMALDEHYDE SOLUTIONS OF LOW METHANOL CONTENT BY DISTILLATION WITH A BINARY SYSTEM

Guenther Matthias, Ludwigshafen; Hans Diem, Mannheim, and Gunter Lehmann, Ludwigshagen, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Jan. 9, 1973, Ser. No. 322,205
Claims priority, application Germany, Jan. 15, 1972, 2201865
Int. Cl. B01d *3/34;* **C07c** *47/04*
U.S. Cl. 203—56 **12 Claims**

1. A process for the production of aqueous formaldehyde solutions having a low content of methanol by distillation which comprises distilling an aqueous solution of formaldehyde containing methanol in a distillation column in the presence in said column of (a) at least one alkanol of more than seven carbon atoms and (b) at least one dialkyl ether in which each of the two alkyl groups contains more than seven carbon atoms, withdrawing as the overhead distillate fraction a methanol-rich distillate, and withdrawing as the bottoms distillate fraction aqueous formaldehyde solution having low methanol content.

3,853,720
ELECTROLYSIS OF BRINE USING PERMEABLE MEMBRANES COMPRISING FLUOROCARBON COPOLYMERS

Malcolm Korach, and Robbie T. Foster, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Oct. 24, 1972, Ser. No. 300,040
Int. Cl. C01d *1/06;* **C01b** *7/06*
U.S. Cl. 204—98 **4 Claims**

1. In a process for electrolyzing alkali metal chloride brines in an electrolytic cell having an anolyte compartment and a catholyte compartment separated therefrom by an alkali metal chloride brine permeable, fluorocarbon resin containing, chrysotile asbestos diaphragm, wherein alkali metal chloride brine is fed to said cell and catholyte liquor containing alkali metal chloride and alkali metal hydroxide is recovered from said cell, the imrovement wherein said diaphragm contains from about 1.0 to about 50.0 weight percent of a second fibrous material having a mean fiber diameter of from 2 to about 1,000 times the mean fiber diameter of chrysotile asbestos, and wherein said diaphragm further contains from about 0.01 to about 22 weight percent of fluorocarbon resin, the fluorocarbon resin being dispersed into the diaphragm to a depth of at least 0.08 inch from one surface thereof, said fluorocarbon resin providing a coating on individual asbestos fiber bundles, and said fluorocarbon resin having the empirical formula:

$$-\left(C_mF_{2m}\right)_M\left(CF_2-\underset{\underset{R}{|}}{CF}\right)_N-$$

where m is from 2 to 10, the ratio of M to N is sufficient to provide an equivalent weight of from 600 to 2,000, R is chosen from:

A,

$-O-CF_2-CF_2-_pA$,

$$-\left(OCF_2-\underset{\underset{Y}{|}}{CF}\right)_p-A$$

$$-\left(OCF_2-\underset{\underset{Y}{|}}{CF}\right)_p\left(O-CF_2-\underset{\underset{R_f}{|}}{CF}\right)-A$$

$-\phi A$, and

$-CF_2-_pA$;

where p is from 1 to 3, Y is chosen from the group consisting of —F and perfluoroalkyls having from one to 10 carbon atoms, R_f is chosen from the group consisting of —F and perfluoroalkyls having from one to 10 carbon atoms, and ϕ is an aryl group;

and where A is an acid group chosen from the group consisting of:

$-SO_3H$,

$-CF_2SO_3H$,

$-CCl_2SO_3H$,

$-\phi'SO_3H$,

$-PO_3H_2$,

$-PO_2H_2$,

—COOH, and

$\phi'OH$ where ϕ' is an aryl group.

3,853,721
PROCESS FOR ELECTROLYSING BRINE

William B. Darlington, and Robbie T. Foster, both of Corpus Christi, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 284,022, Aug. 28, 1972, , which is a continuation-in-part of Ser. No. 179,151, Sept. 9, 1971. This application Oct. 24, 1972, Ser. No. 300,051
Int. Cl. C01d *1/06*; **C01b** *7/06*
U.S. Cl. 204—98 **10 Claims**

1. In a process for electrolyzing alkali metal chloride brines in an electrolytic cell having an anolyte compartment and a catholyte compartment separated therefrom by an alkali metal chloride brine permeable, fluorocarbon resin containing, asbestos disphragm, wherein alkali metal chloride brine is fed to said cell and catholyte liquor containing alkali metal chloride and alkali metal hydroxide is recovered from said cell, the improvement wherein said disphragm contains from about 0.01 to about 22 weight percent of fluorocarbon resin, the fluorocarbon resin being dispersed into the diaphragm to a depth of at least 0.08 inch from one surface thereof, said fluorocarbon resin providing a coating on individual asbestos fiber bundles, and said fluorocarbon resin having the empirical formula:

$$-\left(\left(C_mF_{2m}\right)_M\left(CF_2-CF\right)_N\right)-$$
$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad R$$

where m is from 2 to 10, the ratio of M to N is sufficient to provide an equivalent weight of from 600 to 2,000, R is chosen from: A,

$$+O-CF_2-CF_2\rightarrow_p A,$$

$$\left(O-CF_2-CF\right)_p A,$$
$$\qquad\qquad\quad Y$$

$$\left(O-CF_2-CF\right)_p\left(O-CF_2-CF\right)A,$$
$$\qquad\quad Y\qquad\qquad\qquad\quad R_f$$

$$-\phi A, \text{ and}$$

$$+CF_2\rightarrow_p A;$$

where p is from 1 to 3, Y is chosen from the group consisting of —F and perfluoroalkyls having from 1 to 10 carbon atoms, R_f is chosen from the group consisting of —F and perfluoroalkyls having from 1 to 10 carbon atoms, and ϕ is an aryl group; and where A is an acid group chosen from the group consisting of

$-SO_3H$,
$-CF_2SO_3H$,
$-CCl_2SO_3H$,
$-\phi'SO_3H$,
$-PO_3H_2$,
$-PO_2H_2$,
$\phi'OH$ where ϕ' is an aryl group.

3,853,722
METHOD OF PRODUCING PRILLED SODIUM HYDROXIDE FROM MERCURY CELL SODIUM HYDROXIDE

Donald T. Rigler, and Knut J. Johnsen, both of Lake Charles, La., assignors to PPG Industries, Inc., Pittsburgh, Pa.

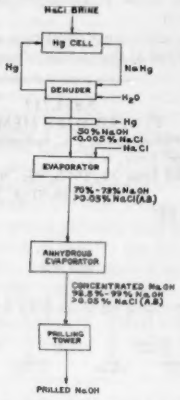
Filed June 28, 1973, Ser. No. 374,432
Int. Cl. C01d *1/08*, *1/28*
U.S. Cl. 204—99 **11 Claims**

1. A method of producing caustic soda prills from mercury cell aqueous caustic soda which contains mercury and less than 0.005 weight percent, anhydrous basis, of sodium chloride, comprising:

maintaining the mercury content of the aqueous caustic soda below about 0.10 parts per million, anhydrous basis;

adding sufficient sodium chloride to said aqueous caustic soda to provide a sodium chloride content greater than 0.05 weight percent, anhydrous basis;

thereafter forming substantially anhydrous caustic soda; and

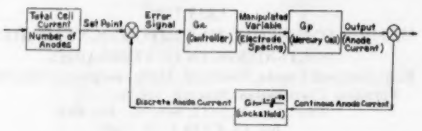


prilling the substantially anhydrous caustic soda, whereby to form prills.

3,853,723
MERCURY CELL ANODE SHORT DETECTION AND CURRENT BALANCING

Robert Mack, Lake Charles, La., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed July 10, 1973, Ser. No. 377,993
Int. Cl. C01d *1/14*
U.S. Cl. 204—99 **20 Claims**



1. In a method of conducting electrolysis in an electrolytic cell circuit having a plurality of electrolytic cells, each of said cells having a flowing mercury amalgam cathode and a plurality of anode rows in a plurality of vertically movable anode banks, and a current flow from the anodes in said anode banks to the cathode, and having a common control element the improvement comprising:

discretely measuring each of the individual current flows through the anode rows of a single cell at intervals sufficient to detect and respond to incipient changes therein;

electrically generating individual first electrical signals proportional to the individual current flows in each of the individual anode rows;

simultaneously transmitting all of the said first electrical signals from a single cell to and through a first level of switches to a second level of switches;

individually transmitting each of said first electrical signals from said second level of switches to the common control element;

electrically generating a second electrical signal proportional to the average of the individual current flows through said anode rows; and

electrically generating individual anode row error signals proportional to the difference between said individual first electrical signals and said second electrical signal whereby to control said cell whereby to maintain the individual current flows within a preset range of the aver-

age of the individual current flows through the anode rows of said cell.

3,853,724

PROCESS FOR ELECTROWINNING OF COPPER VALUES FROM SOLID PARTICLES IN A SULFURIC ACID ELECTROLYTE

Charles William Wojcik, and Bruce Charles Wojcik, both of Twin Falls, Idaho, assignors to Reed Goold; Charles W. Wojcik; Gerald D. Cooper and Wilfred H. Herrett, a part interest to each

Filed July 24, 1973, Ser. No. 382,145
Int. Cl. C22d *1/16*
U.S. Cl. 204—108 **8 Claims**

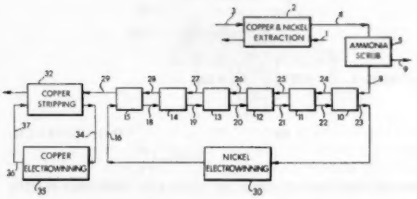
1. A process for electrowinning of copper values from a finely divided copper-bearing solid selected from the class consisting of cement copper and copper sulfides comprising the steps of establishing a source of copper for leaching by continuously agitating a quantity of said copper-bearing solids in an H_2SO_4 electrolyte contained in an electrolytic cell having a cathode and an anode, establishing and maintaining in said electrolyte a dissolved iron concentration of at least ten grams per liter and leaching copper from said source while depositing copper on said cathode by continuously passing a direct current of at least two volts through said electrolyte between said cathode and anode at a current density in excess of about 60 amperes per square foot of cathode area whereby to effect deposition of copper on said cathode concomittently with liberation of hydrogen thereat.

3,853,725

SELECTIVE STRIPPING PROCESS

Roald R. Skarbo, Lexington, Mass., assignor to Kennecott Copper Corporation, New York, N.Y.

Filed June 28, 1972, Ser. No. 266,985
Int. Cl. C22d *1/14*; B01d *11/00*; B01j *1/04*
U.S. Cl. 204—112 **15 Claims**



12. A process for selectively removing nickel from a water-immiscible organic oxime extractant loaded with copper and nickel comprising introducing said extractant into a first of a plurality of stripping stages and flowing said extractant through said plurality of stripping stages to a last stripping stage, introducing an aqueous acid solution containing an acid of the type which forms a water soluble nickel salt when reacted with nickel into said last stage and flowing said aqueous acid solution countercurrent to the flow of said extractant through said stages, the mole ratio of hydrogen ion in the aqueous solution introduced at said last stage to nickel ion in the oxime extractant introduced at said first stage being maintained between the range of about 1.8 to 2.2, the mole ratio of hydrogen ion in the aqueous solution to nickel ion in the oxime extractant being chosen to cause nickel ion in the oxime extractant to transfer to the aqueous solution in preference to copper ion with hydrogen ion in the aqueous solution transferring to the oxime extractant to replace the nickel ion transferred therefrom.

3,853,726

METHOD OF PRODUCING ORGANOCHLOROSILANES

Boris Iosifovich Vainshtein, B. Trekhgorny perenlok, 1/26, kv. 12.; Alexandr Vasilievich Zimin, Kutuzovsky prospekt, 30/32, kv. 797.; Evgeny Andreevich Chernyshov, Leninsky prospekt, 61/1, kv. 54.; Margarita Evgenievna Kurek, prospekt Vernadskogo, 95, korpus 2, kv. 274.; Alexandr Nikolaevich Polivanov, B. Akademicheskaya ulista, 21, kv. 25., all of Moscow; Ljudmila Petrovna Bogovtseva, ulitsa, Lapshenkova, 99/28., Podolsk Moskovskoi oblasti; Eduard Sergeevich Starodubtsev, Niznaedneprovskaya ulitsa, 12, kv. 18., Zaporozhie; Anatoly Ivanovich Masljukov, ulitsa 40 let Sovetskoi Ukrainy, 58, kv. 33., Zaporozhie; Vladimir Ivanovich Andreev, ulitsa Lebedeva, 4In, kv. 68., Zaporozhie; Miron Aronovich Ezerets, Tsentralny bulvar, 3, kv. 205., and Boris Ivanovich Zorov, ulitsa Vlasova, II, korpus I, kv. 32., Moscow, all of U.S.S.R.

Continuation of Ser. No. 160,197, July 6, 1971, abandoned. This application Jan. 2, 1973, Ser. No. 320,680
Claims priority, application U.S.S.R., July 4, 1970, 1447056
Int. Cl. B01j *1/10*
U.S. Cl. 204—158 HE **6 Claims**

1. A method of producing organochlorosilanes having the general formulae $RR_n'SiCl_{3-n}$ and $R''(SiR_n'Cl_{3-n})_2$, where R is a radical selected from the group consisting of aryl, chloroaryl, fluoroaryl, fluorochloroaryl, functional aryl and heterocyclic radical; R′ is a radical selected from the group consisting of the alkyl and aryl radicals; R″ is a radical selected from the group consisting of arylene, chloroarylene, fluoroarylene and functional arylene; and $n = 0$, 1, or 2, which comprises reacting a compound selected from the group consisting of organochlorosilicohydrides and trichlorosilane having the general formula $HSiR_n'Cl_{3-n}$, where R′ is a radical selected from the group consisting of alkyl and aryl radicals; and $n = 0$, 1, or 2, with chloride-containing compounds selected from the group consisting of compounds of the general formula RCl and general formula $R''Cl_2$, where R is a radical selected from the group consisting of aryl, chloroaryl, fluoroaryl, fluorochloroaryl, functional aryl and heterocyclic radicals; R″ is a radical selected from the group consisting of arylene, chloroarylene, fluoroarylene and functional arylene; the said process being carried out in the vapor phase at a temperature of not above 450°C at a atmospheric pressure and under the action of ionizing radiation selected from the group consisting of high speed electrons, gamma radiation and beta radiation.

3,853,727

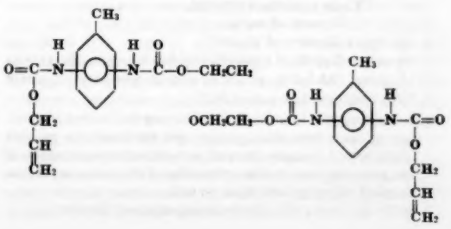
SPRAYABLE PHOTOCURABLE SURFACE COATING COMPOSITION

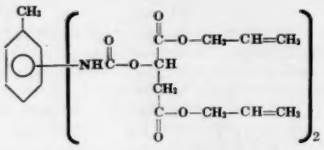
Joseph Francis Wrzesinski, Baltimore, Md., assignor to W. R. Grace & Co., New York, N.Y.

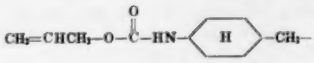
Continuation-in-part of Ser. No. 276,287, July 31, 1972, abandoned. This application Oct. 15, 1973, Ser. No. 406,269
Int. Cl. C08d *1/00*; C08f *1/00*
U.S. Cl. 204—159.18 **10 Claims**

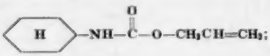
1. A sprayable photocurable surface coating composition consisting essentially of a mixture of:

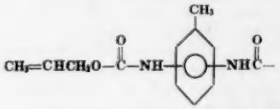
a. 1 part of a polyene having the formula;

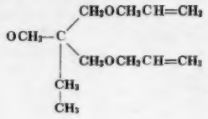












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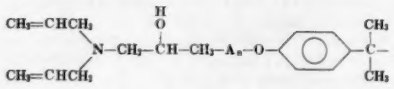
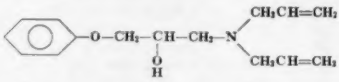
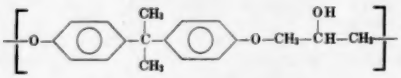




wherein A is



and *n* has an average value such that the average molecular weight of the polyene is about 584;

b. about 0.2–1 part of a nonionic emulsifier;

c. about 0.1–2 parts of a wax selected from the group consisting of carnauba wax, a paraffin wax melting at about 43°–68°C, or a mixture thereof;

d. about 1–50 parts of water;

e. about 0.1–2 parts of glycerol;

f. about 0.1–2 parts of a paraffin oil having a specific gravity of about 0.83–0.9 at 20°C and a viscosity of about 500–1,000 centipoises at 20°C;

g. a quantity of a liquid polythiol having molecules containing at least two thiol groups per molecule to provide about 0.6–1.1 equivalent of polythiol per equivalent of the polyene, the total functionality of the polyene and the polytiol being greater than 4; and

h. 0.05–0.25 part of a photocuring rate accelerator.

3,853,728

PHOTOCURABLE POLISHING WAX CONTAINING A POLYENE-POLYTHIOL RESIN

Joseph Francis Wrzesinski, Baltimore, Md., assignor to W. R. Grace & Co., New York, N.Y.

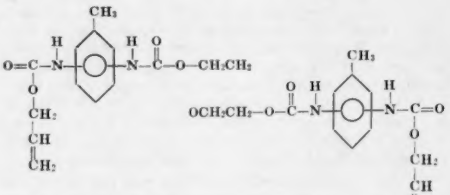
Continuation-in-part of Ser. No. 316,766, Dec. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 276,300, July 31, 1972, abandoned. This application Sept. 27, 1973, Ser. No. 401,312

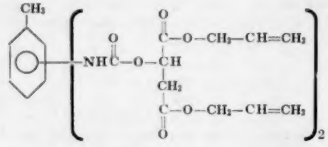
Int. Cl. C08d *1/00*; C08f *1/00*

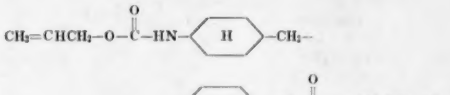
U.S. Cl. 204—159.18 **14 Claims**

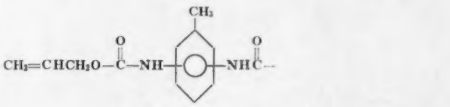
1. A photocurable polishing wax consisting essentially of a mixture of:

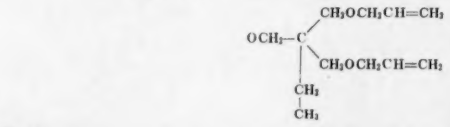
a. 1 part of a polyene having the formula;

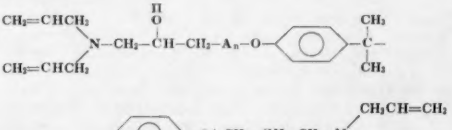






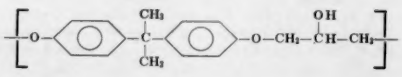






or

wherein A is



and *n* has an average value such that the average molecular weight of the polyene is about 584;

b. about 0.2–1 part of a nonionic emulsifier;

c. about 0.1–2 parts of a wax selected from the group consisting of carnauba wax, a paraffin wax melting at about 43°–68°C, or a mixture thereof;

d. about 1–50 parts of water;

e. a quantity of a polythiol having molecules containing at least two thiol groups per molecule to provide about 0.6–1.1 equivalent of polythiol per equivalent of the polyene, the total functionality of the polyene and the polythiol being greater than 4; and

f. 0.05–0.25 part of a photocuring rate accelerator.

3,853,729

NEW PHOTOCHEMICAL CYCLOALKANE OXIMATION PROCESS

George Lucas, Paris, France, assignor to Societe Anonyme dite Societe Nationale Des Petroles D'Aquitaine, Paris, France

Division of Ser. No. 230,373, Feb. 29, 1972, Pat. No. 3,800,159. This application July 25, 1973, Ser. No. 382,334

Int. Cl. B01j *1/10, 1/14*

U.S. Cl. 204—162 XN **15 Claims**

1. A process for the photo-oximation of cycloalkanes by means of a gaseous nitrosating agent, characterized by the fact that the agent is fed into radiation zone, without any cycloalkane present, the radiation-activated radicals are transferred immediately to an adjoining reaction zone containing the cycloalkane, and the oxime is produced in this reaction zone and drawn off.

3,853,730

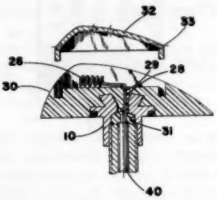
REFERENCE ELECTRODE

Edward P. Anderson, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Mar. 29, 1973, Ser. No. 345,869

Int. Cl. G01n *27/30;* **C23f** *13/00*

U.S. Cl. 204—195 F **3 Claims**



1. A reference electrode for a marine cathodic protection device, comprising:

a housing,

a wire electrode mounted in said housing, and means for mounting said housing to the hull of a boat, including means providing for connection of said wire electrode to a control circuit for the cathodic protection device,

said housing comprising a body of erosion and corrosion resistant electrically insulating material, said body being molded about a metallic structural support member including a first portion having a plurality of radially extending fins adapted to engage the hull of a boat for maintaining said support member on the hull in a preselected rotational position, and a second portion having a plurality of fingers extending radially into the molded position of said body for maintaining said body in position on said support member,

said housing having a recess therein receiving said wire electrode, and a cover mounted over said recess, said body and cover having an air foil camber along its longitudinal axis and said cover having a plurality of passages therethrough communicating with said recess.

3,853,731

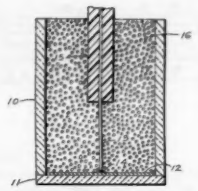
SOLID STATE JUNCTION GLASS ELECTRODE AND METHOD OF MAKING SAID ELECTRODE

Don N. Gray, Sylvania, and Chung-Chang Young, Toledo, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Mar. 12, 1973, Ser. No. 339,743

Int. Cl. G01n *27/36*

U.S. Cl. 204—195 G **17 Claims**



1. A glass electrode having a solid-state junction which comprises an electrode body, a membrane of ion-selective glass closing one end of said body, a silver-silver halide composite directly fused to the inside surface of said membrane, the composite being a reaction product of a mixture of:

a. at least about 0.1 percent by weight of the mixture of silver oxide; and

b. at least about 0.1 percent by weight of the mixture of a silver salt of a halogen oxy acid, the mixture being heated to a temperature of about 400°–650°C., and means for connecting said composite to an external electrical circuit.

3,853,732

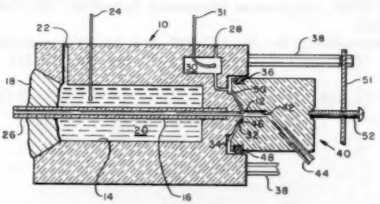
ELECTRODE STRUCTURE FOR POTENTIOMETRIC SAMPLE ANALYSIS

Albert H. Brand, Briarcliff Manor, and K. Jagan Mohan Rao, Tarrytown, both of N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Apr. 10, 1972, Ser. No. 242,507

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 F **4 Claims**

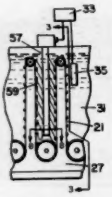


1. An apparatus for electrochemical measurements of the continuous-flow type, comprising: first and second body members of electrical insulating material defining a continuous-flow sample passageway therethrough having a sample inlet in one of said members and a sample discharge in the other of said members, said members defining an annular electrolyte chamber and a second passageway having an outlet into said sample passageway substantially around the latter's circumference and forming an open liquid junction between said annular electrolyte chamber and said sample passageway, said second passageway being formed at said outlet thereof and throughout its length between cooperating wall surfaces of the respective members, said cooperating wall surfaces extending in a direction transverse of said sample passageway, and a sensing electrode extending into said sample passageway and having an ion-selective surface exposed in said sample passageway, one of said members being movable away from the other of said members to vary the cross-sectional dimension of said second passageway.

3,853,733
APPARATUS FOR ELECTROLYTICALLY TREATING ARTICLES

John J. Jacobs, 40 Wenona St., Depew, N.Y. 14043

Filed Feb. 20, 1973, Ser. No. 334,008
Int. Cl. B65g 49/04
U.S. Cl. 204—203 17 Claims

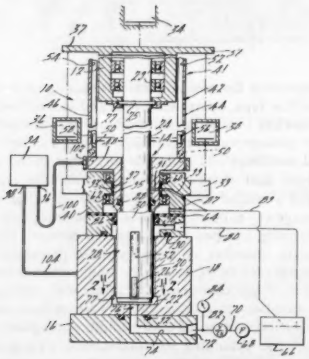


1. An apparatus for electrolytically treating metal articles comprising:
   a. a tank for holding a liquid electrolyte;
   b. an endless conveyor comprising a resilient belt of non-electrically conducting material having a plurality of strips of chemically resistant and electrically conductive material extending laterally across the belt, said strips being longitudinally spaced along one side of the belt, a portion of said belt being mounted to pass through said tank and liquid therein;
   c. a voltage source; and
   d. means for maintaining electrical contact with a plurality of the strips over a predetermined distance of travel of said belt within said tank with said voltage source, said contact means adapted to maintain electrical contact when said strips are immersed in the liquid.

3,853,734
FLUID SYSTEM FOR HONING AND PLATING APPARATUS

Myron P. Ellis, Royal Oak, and Albin S. Czubak, Detroit, both of Mich., assignors to Micromatic Industries, Inc., Detroit, Mich.

Continuation of Ser. No. 172,007, Aug. 16, 1971, abandoned. This application Apr. 27, 1973, Ser. No. 355,216
Int. Cl. C23b 5/68
U.S. Cl. 204—212 7 Claims

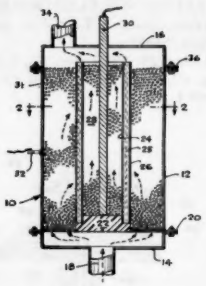


1. In plating and honing apparatus for plating metal on and removing metal from the surface defining a bore in an electrically conductive workpiece, the combination comprising first means adapted to hold a workpiece in a stationary position, a plating and honing tool including a tool support and a sleeve surrounding said tool support, said tool support and said sleeve being adapted to be inserted in the bore defined by said surface, sealing means between said tool support and said sleeve means mounting said plating and honing tool for reciprocation and rotation relative to said surface, a reservoir for electrolytic fluid, fluid pressure generating means, and fluid conduit means for moving electrolytic fluid under pressure from said reservoir through said bore and to and from said first means and said sealing means and back to said reservoir through a closed passage defined by said surface and said tool.

3,853,735
ELECTROLYTIC APPARATUS FOR PREPARATION OF ORGANOMETALLIC COMPOUNDS

John C. Shepard, Jr., Lake Jackson; Edward E. Johnson, Sweeny, and Robert W. Bearman, Lake Jackson, all of Tex., assignors to Nalco Chemical Company, Chicago, Ill.

Division of Ser. No. 185,005, Sept. 30, 1971, abandoned. This application Feb. 16, 1973, Ser. No. 333,041
Int. Cl. B01k 3/10
U.S. Cl. 204—260 3 Claims

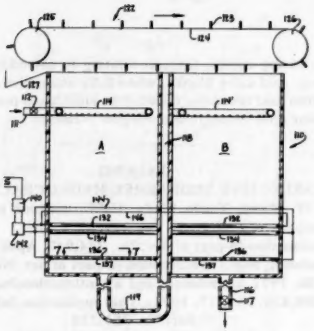


1. An electrolytic cell for producing organometallic compounds comprising a substantially upstanding cylindrical metal vessel having side, top and bottom walls, a perforate support within the vessel extending thereacross and spaced above the bottom wall, a plug of insulating material supported centrally of said perforate support, a tubular perforate member of insulating material vertically extending upwardly from the plug and defining with the plug a first chamber within the member and a second chamber with the perforate support and the vessel side walls, said tubular perforate member including a semi-rigid open large mesh haircurler member, inner and outer layers of fine mesh nylon screen along the inner and outer sides of said haircurler member and supported thereby, the mesh of the screen layers being substantially finer than the mesh of the haircurler member and such as to prevent the movement therethrough of the shot, a first lead electrode in the form of shot within said first chamber, a second lead electrode in the form of shot within said second chamber, means connecting said first and second lead electrodes to a source of low frequency alternating current potential, an opening in the bottom wall, and an opening in the top wall for permitting a Grignard reagent solution to flow through the vessel to be electrolysed, whereby said perforate member provides a flow path through the cell for the solution.

3,853,736
ELECTROFLOTATION APPARATUS

Warren B. Harnden, Rockford, Ill., and Eugene H. Morrill, Marathon, Fla., assignors to Illinois National Bank & Trust Co., trustee under trust, Rockford, Ill.

Continuation-in-part of Ser. No. 143,305, May 14, 1971, Pat. No. 3,726,780. This application Mar. 23, 1973, Ser. No. 344,195. The portion of the term of this patent subsequent to Apr. 10, 1990, has been disclaimed.
Int. Cl. B01k 3/00
U.S. Cl. 204—269 20 Claims



1. An electroflotation apparatus for purification of liquids, comprising

a. a first compartment having a bottom end and a top end;

b. supply means adjacent the top end of the first compartment for the introduction of liquid and for distributing said liquid over the cross-sectional area of the first compartment;

c. outlet means adjacent the bottom of the first compartment for the withdrawal of liquid therefrom;

d. a second compartment having bottom and top ends at about the same levels as the respective ends of the first compartment;

e. conduit means connected to the outlet means of the first compartment for directing the liquid therefrom to the second compartment and for distributing said liquid over the cross-sectional area of the second compartment;

f. discharge means adjacent the bottom end of the second compartment for the withdrawal of liquid from the compartment;

g. a plurality of electrodes disposed substantially horizontally one above the other in each compartment and connected to a source of electricity to produce an upwardly flow of gas bubbles by electrolysis of the liquid flowing downwardly through the compartments;

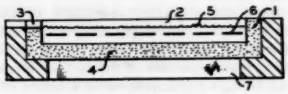
h. the total negative electrode area being greater than the total positive electrode area in each compartment, and there being a concentration of negative electrode area adjacent the bottom end of at least the second compartment to thereby provide a negatively charged zone adjacent said discharge means; and

i. means associated with the supply and discharge means for controlling the flow of liquid downwardly through the compartments in a non-turbulent manner, counter to the upwardly flow of gas bubbles, and at a velocity less than that of the rising bubbles.

3,853,737
SHALLOW-BED ELECTROCHEMICAL CELL

William V. Childs, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 6, 1972, Ser. No. 286,685
Int. Cl. B01k 1/00, 3/04; C07b 29/06
U.S. Cl. 204—270 7 Claims



1. An electrolysis cell comprising:

a. an impervious jacket provided with openings for inlet and egress of electrolyte, feed and product,

b. a porous electrode plate of dished configuration to hold a level of electrolyte not exceeding 6 inches in depth, said porous electrode plate being positioned within said jacket, means defining a feed inlet passageway at the bottom surface of said porous electrode to pass the feed into the pores of said porous electrode,

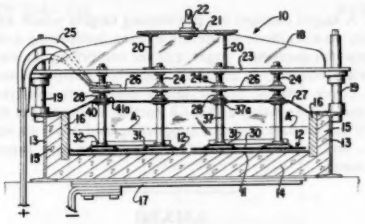
c. an electrode plate situated within the dished configuration of the dished electrode plate removed from said dished electrode plate a distance not exceeding 3 inches so as to be submerged in the electrolyte contained by the dished configuration of said porous electrode plate, and

d. terminals for connecting said electrode plates with an electrical source.

3,853,738
DIMENSIONALLY STABLE ANODE CONSTRUCTION

Richard E. Loftfield, Chardon, and Ramesh C. Jhaveri, Mayfield Heights, both of Ohio, assignors to Electronor Corporation, Panama City, Panama

Continuation of Ser. No. 880,797, Nov. 28, 1969, abandoned. This application Oct. 2, 1972, Ser. No. 294,241
Int. Cl. B01k 3/04; C01b 7/06; B01k 3/06
U.S. Cl. 204—286 16 Claims



1. A dimensionally stable anode for use in a flowing mercury cathode electrolysis cell comprising a planar mesh anode made of a valve metal provided with an electrically conductive, electrocatalytic coating on the working anode face, at least one laterally inverted, U-shaped conducting bar open at both ends connected by the integral legs of the bar to the mesh anode and extending substantially from end to end of the working face, the legs of the conductor bar being equally spaced laterally along the anode face in the other direction so the distance between the center line and each leg is equal and the distance between laterally parallel bars is twice the distance between the center line and each leg to provide uniform longitudinal distribution of current on the anode face, and means on said conductor bar for a detachable connection to electrical lead-ins.

3,853,739
PLATINUM GROUP METAL OXIDE COATED ELECTRODES

James M. Kolb, Mentor, and Kevin J. O'Leary, Cleveland Heights, both of Ohio, assignors to Electronor Corporation, Panama City, Panama

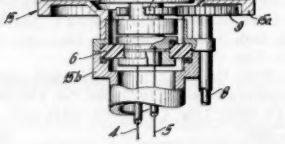
Filed June 23, 1972, Ser. No. 265,690
Int. Cl. B01k *3/06*; **C01b** *7/06*
U.S. Cl. 204—290 F **7 Claims**

1. An electrode consisting essentially of an electrically conductive substrate, an electrocatalytically active material and an amorphous valve metal oxide binder for adhering said material to at least a portion of the surface of said substrate, the material being a particulate solid solution of iridium and ruthenium oxides having a particle size of less than 0.1 micron, iridium oxide being present within the range of 1.0–99 mole percent, the balance being ruthenium oxide.

3,853,740
TARGET CHANGER FOR SPUTTERING BY IONIC BOMBARDMENT

Anton Kunz, Triesenberg, Liechtenstein, assignor to Balzer Patent-Und Beteiligungs-Aktiengesellschaft, Balzers, Furstentum, Liechtenstein

Filed Apr. 5, 1973, Ser. No. 348,018
Claims priority, application Switzerland, Nov. 23, 1972, 17202/72
Int. Cl. C23c *15/00*
U.S. Cl. 204—298 **7 Claims**



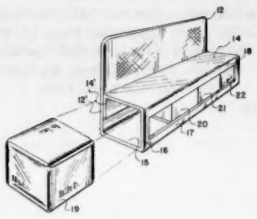
1. A target changer for positioning targets which are to be subjected to cathode sputtering by ions, comprising a movable support for carrying a target, a cover comprising an ion shielding electrode, means adapted to supply a positive potential to said cover relative to the target said cover overlying said support but exposing at least a portion of the target thereon, electrical insulation means supporting said cover on said support, and mounting means for supporting said support for movement.

3,853,741
CALENDAR

Carle D. Klupt, Baltimore, Md., assignor to Scorecard Promotions, Inc., Baltimore, Md.

Division of Ser. No. 146,632, May 25, 1971, abandoned. This application June 11, 1973, Ser. No. 369,274
Int. Cl. B65d *25/54*; **G09d** *3/02*
U.S. Cl. 206—45.31 **5 Claims**

1. A kit for an eternal calendar assembly comprising a package means, a receiving member within said package means, said receiving member having four fold lines thereon designating five separate portions, one end portion side having adhesive thereon and being secured to a portion of the opposite side of said other end portion adjacent its corresponding fold line, the middle portion of said receiving member having a window means therein, a plurality of partially assembled cube blanks in said package means, each cube blank having six equal side portions and seven tab portions, one of said tab portions having adhesive on one side thereof and securing said portion to the opposite side of one of said equal side portions, said equal side portions of each partially assembled cube



blank having indicia thereon relating to calendar year dates thereon, said cube blanks, when fully assembled, adapted to fit within said receiving member to illustrate a predetermined calendar date through said window means.

3,853,742
SELECTIVE MIDBARREL HYDROCRACKING

John W. Ward, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Continuation-in-part of Ser. No. 244,947, April 17, 1972, abandoned, and a continuation-in-part of Ser. No. 191,123, Oct. 20, 1971, abandoned, and a continuation-in-part of Ser. No. 209,439, Dec. 17, 1971,. This application July 20, 1973, Ser. No. 381,220
Int. Cl. C10g *13/02*; **C01b** *33/28*
U.S. Cl. 208—111 **8 Claims**

1. The method of selectivity converting hydrocarbons boiling above about 700°F to midbarrel fuel products boiling between about 300° and 700°F including the steps of reacting said hydrocarbons with hydrogen under hydrocracking conditions including a temperature of at least about 500°F, a pressure of at least about 200 psig and a hydrogen addition rate of at least about 400 SCF/bbl of said hydrocarbons sufficient to convert at least about 40 volume percent of said hydrocarbons per pass to products boiling below about 700°F with at least about 50 percent midbarrel selectivity in the presence of a catalytic combination of a crystalline aluminosilicate zeolite, an amorphous refractory inorganic oxide, and a hydrogenation component selected from nickel, tungsten, cobalt and molybdenum metals, oxides and sulfides, wherein said zeolite constitutes less than about 50 weight percent of said combination based on the combined weight of said zeolite and refractory oxide and is characterized by a crystal structure corresponding to faujasite or zeolite L, a silica-to-alumina mole ratio of at least about 3, a sodium content corresponding to less than about 2 weight percent Na_2O, and a non-uniform pore size distribution in which at least 25 percent of the pore volume is contained in pores having diameters greater than about 20 angstroms and at least about 17 percent in pores having diameters greater than about 40 angstroms.

3,853,743
REMOVAL OF ORGANIC CATIONS FROM CRYSTALLINE ALUMINOSILICATES

Schwartz, Albert B., Philadelphia, Pa., assignor to Mobile Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 27,182, April 9, 1970, abandoned. This application Feb. 15, 1973, Ser. No. 332,970
Int. Cl. C10g *13/02*, *11/02*; **B01j** *11/40*
U.S. Cl. 208—111 **13 Claims**

1. A process for effecting removal of organic cations which have been introduced into an aluminosilicate zeolite during its crystallization by heating said zeolite at a temperature between about 500°F. and about 1,000°F in an atmosphere

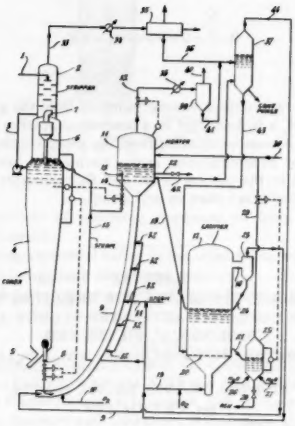
consisting essentially of ammonia or mixtures thereof with nitrogen.

3,853,744

SOUR WATER DISPOSAL IN FLUID SOLIDS SYSTEMS

Gerard C. Lahn, Parsippany, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed May 14, 1973, Ser. No. 360,082
Int. Cl. C10g 9/32; C01g 11/18; B01d 1/100
U.S. Cl. 208—127 11 Claims



1. In a hydrocarbon conversion process wherein a stream of fluidized solid particles is circulated between a conversion zone and a heating zone, the improvement which comprises:
a. passing a stream of hot fluidized particles from said heating zone to a steam generation zone;
b. introducing a refinery waste water stream into said steam generation zone and contacting the same with said hot fluidized particles thereby vaporizing said refinery waste water stream to steam, and
c. utilizing at least a portion of the resulting steam, without further treatment, in said hydrocarbon conversion process.

3,853,745

LOW TEMPERATURE-LOW PRESSURE NAPHTHA REFORMING PROCESS

Albert B. Welty, Jr., Westfield, N.J., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Mar. 7, 1973, Ser. No. 338,992
Int. Cl. C10g 35/06, 25/00
U.S. Cl. 208—139 21 Claims

1. A process for reforming a hydrocarbon feedstock comprising naphthenes and paraffins in which the naphthenes are converted to aromatic hydrocarbons, which process comprises contacting said feedstock in a reforming zone with a dehydrogenation and isomerization catalyst at a temperature of between about 600° and 700°F., maintaining a hydrogen pressure of 4 atmospheres or less, and providing in the reforming zone a solid adsorbent mixed with the catalyst for adsorbing the aromatic hydrocarbons as they are produced.

3,853,746

PROCESS FOR SWEETENING HYDROCARBON PRODUCTS WITH SULFENAMIDES

Marion J. Gattuso, Hoffman Estates, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Nov. 1, 1973, Ser. No. 411,979
Int. Cl. C10g 27/06
U.S. Cl. 208—206 13 Claims

1. A process for the sweetening of a hydrocarbon product which comprises treating a mercaptan-containing hydrocarbon product with a sulfenamide activated by a carbonyl or sulfonyl group adjacent to sulfenamide nitrogen whereby said mercaptans are converted to disulfides, and recovering the resultant sweetened hydrocarbon product.

3,853,747

HYDROCRACKING PROCESS

Dean Arthur Young, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Division of Ser. No. 209,440, Dec. 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 869,389, Oct. 24, 1969, abandoned, which is a continuation-in-part of Ser. No. 669,288, Sept. 20, 1967, abandoned. This application Feb. 20, 1973, Ser. No. 334,162
Int. Cl. C10g 13/02
U.S. Cl. 208—111 18 Claims

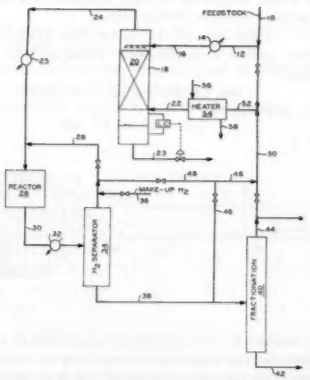
1. A process for hydrocracking a hydrocarbon feedstock which comprises contacting said feedstock plus added hydrogen, and under hydrocracking conditions with a catalyst comprising a crystalline aluminosilicate zeolite cracking base intimately composited with a finely divided Group VIB metal hydrogenating component, said hydrogenating component or a precursor thereof having been composited with said zeolite base in a substantially undissolved form by intimately admixing the two components in an aqueous medium having a pH below 6, but sufficiently high to avoid acid destruction of the zeolite crystal structure.

3,853,748

HYDROGENATION OF CYCLOPENTADIENE

Donald C. Tabler, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 5, 1969, Ser. No. 874,207
Int. Cl. C10g 23/06, 31/14, 37/10
U.S. Cl. 208—255 9 Claims



1. In a process for the selective hydrogenation of a mixture comprising cyclopentadiene and dicyclopentadiene wherein said mixture is preheated in a heating zone in the absence of a catalyst to a given temperature within the range of about 400° to about 650° F. which is sufficient to carry out said

selective hydrogenation, and at which said given temperature there is a substantial formation of a high boiling resin or resin-like residue which fouls said heating zone, the improvement comprising:

minimizing the formation of said residue during said heating step by heating said mixture in said heating zone in the absence of a catalyst to a greater temperature which is greater than said given temperature and substantially reducing the volume and viscosity of said residue;

separating said heated mixture into (a) a high boiling liquid residue having less volume and a lower viscosity than if said mixture had been heated only to said given temperature, and (b) a vaporous stream comprising cyclopentadiene; and

cooling said vaporous stream to a temperature within the range of about 350° to about 600°F. prior to carrying out said selective hydrogenation.

3,853,749

STABILIZATION OF HYDROCRACKED LUBE OIL BY CONTACTING SAID OIL WITH A CATALYST OF THE ZSM-5 TYPE

Wilton F. Espenscheid, Princeton, and Tsoung Y. Yan, Trenton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed July 6, 1973, Ser. No. 377,003
Int. Cl. C10g *23/04*
U.S. Cl. 208—307 **7 Claims**

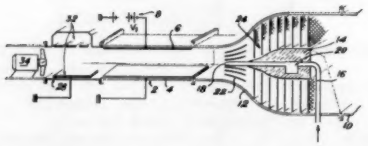
1. A process for stabilizing a hydrocracked lube oil against deterioration attributable to exposure to light and/or air which comprises contacting a hydrocracked lube oil with a catalyst of the ZSM—5 type, in the presence of a small amount, generally at least about 1 weight percent of paraffins, which are normal paraffins or those having slightly branched chains, capable of entering the pore structure of said catalyst, said contacting taking place at a temperature in the approximate range of 400° to 650°F., a liquid hourly space velocity of 0.1 to 10 and a pressure from about atomospheric to 2,000 psig and recovering a lubricating oil of improved stability characteristics.

3,853,750

METHOD AND DEVICE FOR THE COLLECTION OF PARTICLES IN A GAS WITH PARTICLE-SIZE SEPARATION

Robert Volsy, Brignoud, France, assignor to Commissariat a L'Energie Atomique, Paris, France

Filed Dec. 19, 1972, Ser. No. 316,523
Claims priority, application France, Dec. 31, 1971, 71.47800
Int. Cl. B03c *3/12, 3/43, 3/08*
U.S. Cl. 209—127 R **12 Claims**



1. A method for the collection of particles in a polluted gas with particlar-size separation comprising the steps of charging the suspended particles of polluted gas in an ionizer, injecting into a gas stream in non-turbulent regime a flow of said charged polluted gas and collecting said charged particles by passing said gas stream between two substantially parallel conductive plates parallel to the axis of propagation of the gas stream and applying a direct-current potential difference between said plates.

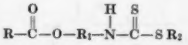
3,853,751

FLOTATION OF SULFIDE ORES USING DITHIOCARBAMATES

Guy H. Harris, Concord, and David J. Collins, Walnut Creek, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 8, 1972, Ser. No. 224,616
Int. Cl. B03d *1/02*
U.S. Cl. 209—166 **10 Claims**

1. A process of concentrating sulfide ores by flotation, which comprises subjecting a sulfide ore of copper, nickel or molybdenum, in the form of a pulp, to a flotation process in the presence of a flotation collector for said sulfides comprising a compound corresponding to the formula



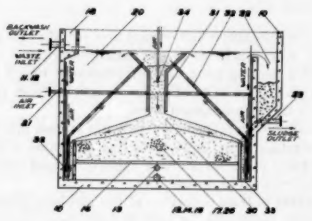
wherein R represents a member selected from the group consisting of H, a hydrocarbyl or a heterohydrocarbyl group; R_1 represents a member selected from the group consisting of an alkylene or heteroalkylene group having the hetero atom substituted in the carbon chain and R_2 represents a hydrocarbyl radical other than an aryl group.

3,853,752

PROCESS AND APPARATUS FOR TREATING WASTES BY A COMBINED ACTIVATED SLUDGE AND BIOLOGICAL FILTER BED

Jerzy Tymoszczuk, 3615 Prud'homme Ave., Apt. 11, Quebec, Canada

Filed Dec. 21, 1970, Ser. No. 100,220
Int. Cl. C02c *1/04*
U.S. Cl. 210—17 **18 Claims**



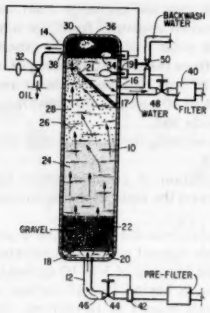
1. A process for the treatment of sewage and the like, said process comprising: maintaining a submerged biological filter bed zone containing finely divided, particulate filter media; maintaining an activated sludge zone in upstream fluid flow relationship to said biological filter bed zone; feeding sewage or the like to be treated to said activated sludge zone; aerating both said biological filter bed zone and said activated sludge zone; withdrawing treated effluent from said biological filter bed zone; and backwashing said biological filter bed zone as often as required to maintain the operating effectiveness of said biological filter bed zone and an acceptable head at the point of withdrawal of the treated effluent, an upper layer of said filter media being transported to a conduit positioned in said activated sludge zone, said conduit having an upper inlet end for the transported filter media and a lower outlet end through which said transported filter media is returned to said upper layer of said filter media, the said transported filter media being aerated during the passage thereof through said conduit.

3,853,753

REMOVING OIL FROM WASTE WATER WITH SULFUR

Loyd W. Jones, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Filed Oct. 13, 1970, Ser. No. 80,424
Int. Cl. B01d *17/04; C02b 9/02*
U.S. Cl. 210—23 13 Claims



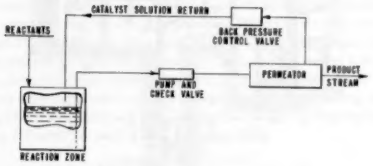
1. A method of removing dispersed oil from oily water which comprises:
contacting elemental sulfur in the solid phase with said oily water to agglomerate the oil; and
separating the agglomerated oil from the water.

3,853,754

MEMBRANE SEPARATION OF HOMOGENEOUS CATALYSTS FROM NITRILE SOLUTIONS

Lawrence Wayne Gosser, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed July 20, 1972, Ser. No. 273,803
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 12 Claims



1. A process for the permselective separation of an organic solution containing
a. a metal-organo complex selected from the group consisting of
A. $MA^1A^2A^3A^4$ in which
M is Ni, Pd or Pt, and the
A's alike or different, are neutral ligands
B. $(Z^1_3M^1)_3M^2X^1$, in which
M^2 is Co or Rh,
X^1 is H, Cl, Br, I or CN,
$Z^1_3M^1$ is a neutral ligand in which
M^1 is P, As or Sb, and
Z^1 is R or OR;
C. $RuX^2_mL_n$, in which
X is Cl, Br, I or a carboxylate,
L is a saturated mononitrile, a monounsaturated mononitrile, an amine, water, an alcohol of two to eight carbon atoms or an aromatic mononitrile,
m is 2 or 3,
n is 0 to 4;
D. $HNi(PY^1Z^2)_nX^3$, in which
Z^2 is R′ or OR′, in which
R′ is hydrocarbyl of up to 18 carbon atoms or such hydrocarbyl substituted with —Cl, —0—, or —CN,
Y^1 is $2Z^2$'s or —R^2—, or —O—R^2—O—,
R^2 being a hydrocarbylene radical of up to 18 carbon atoms,
X^3 is the anion of a protonic acid, and
n is 3 or 4;
E. PdX^3_2, in which
X^3 is the anion of a protonic acid; and
F. BR^3_3, in which
R^3 is a hydrocarbyl of six or more carbon atoms,
b. at least 3 percent of at least one organic hydrocarbon derivative having at least one nitrile group and up to 12 carbon atoms, which consists essentially in contacting one surface of an asymmetric permselective membrane consisting essentially of an aromatic polyimide prepared from pyromellitic dianhydride and 4,4′-diaminodiphenyl ether with said organic solution under pressure and recovering from the other side of the membrane fluid which has passed through the membrane.

3,853,755

OSMOSIS EFFICIENCY FROM TANNIN TREATMENT OF NON-POROUS SEMIPERMEABLE MEMBRANES HAVING HYDROUS HEAVY METAL COATINGS

James Barry Ganci, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 6, 1972, Ser. No. 303,779
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 9 Claims

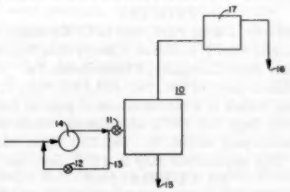
1. A process for separating solvent from an aqueous solution of inorganic salts, comprising contacting a permselective structure with said solution under a pressure greater than the osmotic pressure of the solution, said permselective structure comprising a non-porous semipermeable membrane selected from cellulosic derivative membranes and nitrogen-linked aromatic polymer membranes and a coating of hydrous heavy metal compositions and said structure having been treated with a solution of a hydrolyzable tannin in an amount and under conditions which result in a significant reduction in salt passage through the structure under reverse osmosis conditions.

3,853,756

REVERSE PRESSURE CLEANING OF SUPPORTED SEMIPERMEABLE MEMBRANES

Regis R. Stana, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 12, 1973, Ser. No. 331,458
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 9 Claims



1. A method of cleaning foulants from the surface of a supported semipermeable membrane having a feed side and a support side, comprising the steps of:
a. contacting the feed side of a porous semipermeable membrane, supported by and integrally bonded to the wall of a module comprising resin bonded filler particles, for a

period of time, with a continuous stream of liquid feed solution containing foulants under a pressure of up to about **1000** psi, wherein said foulants concentrate at the membrane feed side surface;

b. releasing the pressure on the feed side of the membrane, for a period of time of between about 5 to about 30 seconds, and activating a means to cause a back pressure on the support side of the membrane of between about 2 to 50 psi to cause a backflow of liquid through the membrane of between about 3–60 gal/sq. ft./day from the support side to the feed side of the membrane, without altering the membrane pore structure, said backflow being effective to remove foulants concentrated at the membrane feed side surface;

c. applying a driving pressure of up to about 1,000 psi to the feed solution to flush the foulants from the feed side of the membrane wherein the time cycle ratio of driving pressure time: back pressure time is over 2:1; and

d. repeating step (b) and then step (c) at least twice.

3,853,757

SUPPORT ELEMENTS FOR TUBULAR MEMBRANES AND PROCESS FOR MANUFACTURING THEM

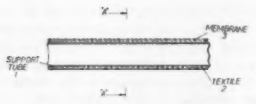
Michel Pages, Ardeche, France, assignor to Rhone-Poulenc S.A., Paris, France

Filed Apr. 13, 1973, Ser. No. 351,039

Claims priority, application France, Apr. 19, 1972, 72.13829

Int. Cl. B01d *31/00, 13/00*

U.S. Cl. 210—23 **8 Claims**



1. A support element for a tubular membrane comprising a support tube and a shrunk textile sheath in gripping contact with the outer surface of the support tube wherein the textile sheath is heat-shrinkable along its diameter and is made of a woven material in which the warp yarns, arranged longitudinally, are yarns which are stable to heat and the weft yarns, arranged transversely, are heat-shrinkable yarns.

3,853,758

SEPARATION OF WASTE DYESTUFFS BY ADSORPTION PROCESS

Marvin J. Hurwitz, Elkins Park; David C. Kennedy, Malvern, both of Pa., and Carl J. Kollman, Cherry Hill, N.J., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 304,756, Nov. 7, 1972, abandoned, which is a continuation-in-part of Ser. No. 289,046, Sept. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 181,259, Sept. 16, 1971, abandoned. This application July 2, 1973, Ser. No. 375,413

Int. Cl. B01d *15/04*

U.S. Cl. 210—27 **14 Claims**

1. A sequential process for separating a dyestuff from an aqueous medium containing at least one dissolved dyestuff comprising:

a. Contacting the aqueous medium with particles of an essentially non-ionogenic, macroreticular, water-insoluble, polymeric adsorbent in the form of beads having an overall bead size in the range of about 0.1 to 3 millimeters average diameter, a porosity of at least 30 percent, a surface area of at least 100 up to 1,000 square meters per gram, and pores with an average pore diameter of 20 to 200 A. units; and

b. Treating the effluent from the foregoing step with particles selected from a class consisting of the salt forms of a weak acid ion exchange resin, an aliphatic weak base ion exchange resin and a combination of a weak acid and an aliphatic weak base ion exchange resin, and

c. Eluting the adsorbed dyestuffs from the non-ionogenic adsorbent with a polar, volatile, water-miscible organic solvent selected from the group consisting of one or more volatile ketones of 3 to 10 carbons, linear and branched alkanols having 1 to 10 carbons, dimethyl formamide and dimethyl acetamide and;

d. Eluting and regenerating the ion exchange resin by treating the resin with

i. an aqueous solution of an appropriate base or acid which will convert the resin to the hydroxide or hydrogen form;

ii. eluting the adsorbed dye-stuffs with a polar, water-miscible organic solvent regenerant selected from one or more volatile ketones of 3 to 10 carbons, linear and branched alkanols having 1 to 10 carbon, alkyl esters of aliphatic acids from 1 to 10 carbons, and dimethyl formamide, and

iii. reconverting the regenerated resin to its salt form by treating with an aqueous solution of one of a mineral acid or an alkali metal hydroxide.

3,853,759

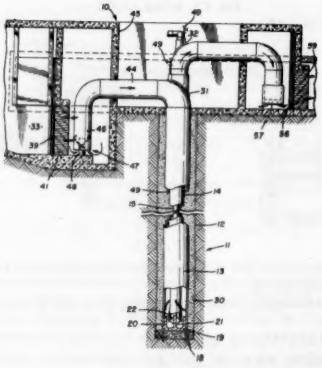
DYNAMIC HYDRAULIC COLUMN ACTIVATION METHOD

James A. Titmas, 3615 Yellow Creek Rd., Akron, Ohio 44313

Continuation-in-part of Ser. No. 735,066, June 6, 1968, abandoned. This application Nov. 19, 1970, Ser. No. 91,151

Int. Cl. C02b *3/04;* **C02c** *1/00*

U.S. Cl. 210—63 **5 Claims**

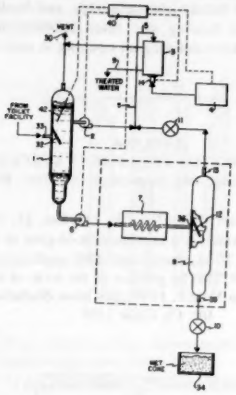


1. A method for treating a continuously flowing sewage material comprising the steps of, feeding the sewage material into the top of a hydraulic influent column, conducting said material from the bottom of said influent column into the bottom of a separate hydraulic effluent column, continuously supplying heat energy to the material near the bottom of one of said columns at the reaction zone to promote chemical reactions and decrease the specific gravity of the material, limiting combustion of the material by restricting the process to oxygen present in the material, whereby the pressure at the bottom of said influent column causes the heated material to rise in said effluent column, and removing the material from the top of said effluent column.

3,853,760
SEWAGE OZONIZING UNIT

Byron V. Klock, and Rudolph C. White, both of Richmond, Va., assignors to Texaco Inc., New York, N.Y.

Filed Mar. 28, 1973, Ser. No. 345,636
Int. Cl. C02b *1/34, 3/08*
U.S. Cl. 210—63 4 Claims



1. In combination in a sewage treatment unit for the disposal of waste sewage from a small installation, an ozonizer; a primary settling zone for receiving liquid sewage and separating liquid from solid wastes communicating with a water treating and storage zone; a gas diffuser communicating with said ozonizer and with said water treating and storage zone for introducing ozone therein in finely dispersed form; said diffuser including a gas inlet in fluid communication with said ozonizer and a plurality of baffles disposed therein each having a recess in their lower extremity; a driven shaft having a plurality of wires extending radially therefrom into said recesses and positioned adjacent said inlet so as to contact ozone issuing from said inlet and disperse same in the form of very small bubbles in the water contained in said water treating zone; synchronous means for pumping liquid from the settling zone to the water treating zone and for supplying ozone from said ozonizer to said water treating and storing zone, a liquid phase coking device, means for bringing solid waste from said primary settling zone to said coking device, a separating coke from coking effluent and conduit means for recycling aqueous coking effluent to said water treating zone.

3,853,761
FILTER

Robert M. McClory, Los Angeles, Calif., assignor to Aqua-Chem. Inc., Milwaukee, Wis.

Filed May 25, 1973, Ser. No. 364,099
Int. Cl. B01d *35/02*
U.S. Cl. 210—100 19 Claims

1. A device for filtering impure liquids comprising:

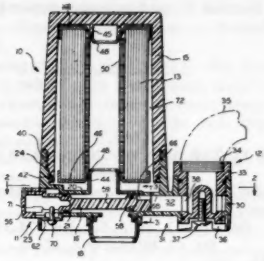
liquid flow control means having an inlet and an outlet,

hollow housing means releasably secured to said liquid flow control means,

filter disposed in said housing and having a first side in communication with said inlet and a second side communicating with said outlet,

means within said liquid flow control means defining a liquid flow passage between said inlet and said outlet other than through said filter means, and

selectively operable valve means associated with said flow passage defining means and having a first position for permitting liquid flow between said inlet and said outlet through said flow passage defining means by passing said filter means and a second position for preventing liquid flow through said flow passage defining means whereby liquid flow is directed from said inlet through said filter

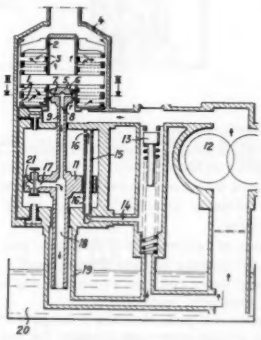


means to said outlet, said valve means being adapted to be manually moved to said second position and being constructed and arranged so that normal liquid pressure is effectiveto move said valve means to its first position.

3,853,762
SELF-CLEANING FILTER

Georges Moatti, 17 Rue Gutemberg, 92100 Boulogne, France

Filed June 7, 1973, Ser. No. 367,748
Claims priority, application France, July 19, 1972, 72.26048
Int. Cl. B01d *29/38*
U.S. Cl. 210—108 8 Claims



1. A self-cleaning filter comprising a plurality of stacked filtering elements forming filtration chambers in tiers, a central tube extending through said filtration chambers defining a central feed passage; said tube having liquid feed orifices formed therein communicating with said filtration chambers; obturating distributor means located in said passage for supplying liquid to be treated to said filtration chambers while successively isolating the feed orifices of the tiered filtration chambers from the liquid to be treated to permit countercurrent washing; and means for reciprocating the obturator in the central passage with respect to said orifices to successively isolate the feed orifices; said reciprocating means including a housing defining a piston chamber, a piston slidably mounted in said piston chamber for movement between two extreme stroke positions and operatively connected to said obturator, and means for simultaneously supplying liquid to both sides of the piston in said piston chamber, said piston having a liquid discharge port formed therein providing communication between the piston chamber on both sides of the piston and the exterior of the piston housing and valve means mounted in the piston for alternately opening and closing said liquid discharge

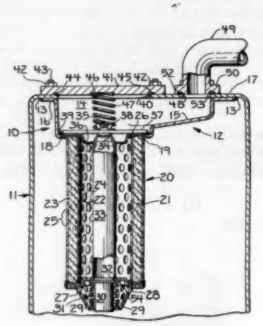
port to said piston chamber at alternate sides of the piston at the end of each stroke of the piston whereby alternate sides of the piston are subjected to the liquid supplied to said piston chamber thereby causing reciprocation of the piston and successive isolation of said filtration chambers by said obturator.

3,853,763

IN-TANK FILTER AND MOUNTING ARRANGEMENT THEREFOR

Lowell R. Hall, Manhattan, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed July 2, 1973, Ser. No. 375,354
Int. Cl. B01d *35/02, 27/10*
U.S. Cl. 210—130 **6 Claims**



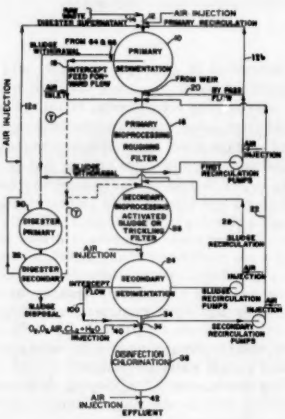
1. A filter assembly comprising,
a generally cylindrical outer case member,
a generally cylindrical inner case member concentrically disposed within and spaced from said outer case member, filter material intermediate said inner and outer case members,
a plurality of perforations in said inner and outer case members for passage of fluid therethrough,
upper and lower end plates on upper and lower ends of said case members, respectively,
said upper end plate defining a flange portion radially outward of said outer case member for use in mounting the filter assembly,
means defining an opening in said upper end plate for admission of fluid to the filter assembly,
a tube concentrically disposed within and spaced from said inner case member and defining upper and lower open ends thereof, the upper end of said tube being located adjacent said means defining an opening, and the lower end thereof being fixed to said lower plate,
means defining an opening through said lower plate so as to give communication between the interior of said tube and the exterior of said filter assembly, and further including bypass valve means normally obturating said means defining an opening through said lower plate, said bypass valve means operating to open communication between said tube interior and filter assembly exterior when a predetermined level of fluid pressure in said tube interior is reached and further operating to close off communication and again obturate said lower plate opening defining means when said fluid pressure drops below said predetermined level,
said filter assembly further in combination with a tank,
a bracket within said tank defining a basin,
means defining an opening in said bracket through which said filter assembly extends, said flange portion of said upper end plate being dimensioned so as to prevent the filter assembly from passing through said bracket,
an inlet opening located in the top wall of said tank and being offset from said filter assembly,
a chute formed in said mounting bracket in line with said top wall inlet opening for dissipating fluid velocity and directing fluid to said filter assembly, and further including means for holding said filter assembly in position within said means defining an opening in said bracket.

3,853,764

WASTE WATER TREATMENT SYSTEM

Edward T. Armstrong, 490 Pepperidge Tree Ter., Butler, N.J. 07405

Continuation-in-part of Ser. No. 100,333, Dec. 21, 1970, Pat. No. 3,730,881, which is a continuation-in-part of Ser. No. 362,118, April 23, 1964, abandoned. This application Apr. 30, 1973, Ser. No. 355,738The portion of the term of this patent subsequent to May 1, 1990, has been disclaimed.
Int. Cl. C02c *1/08*
U.S. Cl. 210—195 **46 Claims**



1. A system for pollution suppression which comprises
a primary sedimentation tank, means to inject raw waste effluent into the tank for settling action,
a digester, means to withdraw sludge from the primary sedimentation tank and feed it to the digester,
a primary bioprocessing tank, means to feed the effluent from the primary sedimentation tank to the primary bioprocessing tank,
a secondary sedimentation tank, means to deliver the effluent from the primary bioprocessing tank to said secondary sedimentation tank,
a disinfection tank, means to add a disinfectant to the disinfection tank, and means for delivery of the effluent from the secondary sedimentation tank to said disinfection tank and discharging fully processed effluent therefrom, first injection means for selectively injecting an oxygen containing fluid under high momentum exchange conditions into the effluent at any point in the pollution suppression system prior to said disinfection tank, and
means to selectively inject an oxygen containing gas into effluent from said disinfection tank to maintain a high dissolved oxygen content in said disinfected effluent.

3,853,765

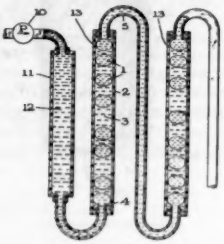
DROPLET COUNTER CURRENT CHROMATOGRAPHY

Takenori Tanimura, Tokyo, Japan, and Yoichiro Ito, Chevy Chase, Md., assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Continuation of Ser. No. 147,133, May 26, 1971, Pat. No. 3,784,467. This application July 2, 1973, Ser. No. 375,883

Int. Cl. B01d *15/08*

U.S. Cl. 210—198 C 4 Claims



1. Droplet counter-current chromatographic apparatus for use in all liquid separation comprising:

a plurality of substantially vertical columns of cylindrical shape;

tubing of narrower bore than said columns connecting one end of each column with the opposite end of the succeeding column; and

tip means at the end of said tubing extending into each succeeding column of a size sufficient for forming a steady stream of droplets of moving phase liquid having a diameter approximately equal to that of said columns when said columns are filled with a stationary phase liquid and a moving phase liquid is being forced through said columns.

3,853,766

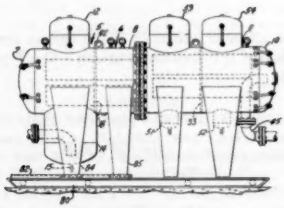
LIQUID SEPARATOR WITH COMMON BULKHEAD WALL SUPPORT FOR END-TO-END COALESCING UNITS

Bernard G. Gentry, Timberlake, N.C., assignor to Midland-Ross Corporation, Cleveland, Ohio

Filed June 4, 1973, Ser. No. 366,662

Int. Cl. B01d *23/06*

U.S. Cl. 210—236 13 Claims



1. A separator for treating dispersions of immiscible liquids to separate one liquid from another comprising:

a shell having inlet and outlet means defining a direction from one end portion of the shell to its opposite end portion;

a bulkhead wall supported in said shell separating a first region from a second region within the shell;

a plurality of cylindrical coalescing units, each comprising a tubular perforated support fixed to said wall and defining a central cavity, a liquid-permeable cylindrical coalescing medium removably supported on the exterior surface of said support, said units being supported by said wall in longitudinally aligned end-to-end pairs in cantilever relation with opposite sides of the wall with their cavities in alignment with an opening through the bulkhead wall;

said units being closed at distal ends to form the cavities of an aligned pair of units into a single liquid conducting chamber closed at both ends, said media being removable from respective supports over the ends thereof in an endwise direction;

said bulkhead wall joining the inner periphery of the shell in substantially sealed relationship;

said shell being constructed in sections including end sections separable along planes generally parallel to said bulkhead wall adjacent the distal ends of said units; said shell defining vertically extending space-enclosing means for collecting coalesced dispersed liquid in contiguous vertical relation with any of said regions containing said units.

3,853,767

PUMPING APPARATUS FOR SKIMMING AND RECOVERING AN OIL LAYER FROM A BODY OF WATER

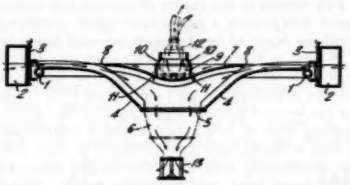
Frank Mohn, Fana, Norway, assignor to Patents and Developments A/S, Nesttun, Norway

Filed Apr. 14, 1972, Ser. No. 244,010

Claims priority, application Norway, Apr. 23, 1971, 1522/71

Int. Cl. E02b *15/04*

U.S. Cl. 210—242 5 Claims

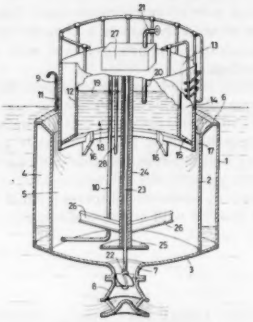


1. Apparatus for recovering oil floating on the surface of a body of water comprising a bowl for skimming and collecting oil from the surface of the water means for supporting the bowl with its peripheral edge surface located at the surface of the water while its body portion therebelow extends downwardly below the level of the body of water, said bowl having a central downwardly and inwardly inclined upper surface, a pump and a pump inlet for pumping recovered oil from the central lower portion of the bowl, a plate below and spaced from the under surface of said bowl, said plate having an outer peripheral surface for directing water and oil toward the peripheral edge of the bowl where oil is separated from water, said plate having a central downwardly and inwardly inclined portion below the bowl, said central downwardly and inwardly inclined portion having a bottom outlet passageway, means for drawing water and oil over the peripheral surface of said plate toward and over the peripheral edge of said bowl, said means also drawing water through the space between said plate and said bowl and out the said passageway, said means including a water pump connected into said water outlet passageway, and the lower portion of said bowl being provided with a channel for the flow of water to the plate below.

3,853,768
SKIMMING APPARATUS

Luigi Bagnulo, Via A. Volta, 18, Milan, Italy

Filed Jan. 10, 1973, Ser. No. 322,503
Claims priority, application Italy, Jan. 19, 1972, 19526/72
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 12 Claims



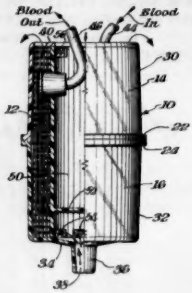
1. A skimming apparatus for skimming off surface-floating substances from liquids, comprising means defining a chamber adapted to be at least partially submerged in a body of liquid, said chamber-defining means including a lower wall portion which defines a lower zone of said chamber for accommodating liquid to be skimmed, and an upper wall portion which defines an upper zone of said chamber for accommodating substances floating on the liquid in said lower zone, said lower and upper wall portions overlapping one another, and said upper wall portion being located within the confines of said lower wall portion in the region of overlap and defining with said lower wall portion a gap in said region; admitting means for admitting liquid to be skimmed into said lower zone and being at least in part constituted by said gap; flotation and ballast means for regulating the extent to which said wall portions are submerged in the surrounding body of liquid and thereby the level of said gap with respect to the surface of the surrounding body of liquid, said flotation and ballast means comprising a liquid-tight compartment in said lower wall portion; discharging means for discharging skimmed liquid from said lower zone; and conveying means for conveying floating substances from said upper zone.

3,853,769
RIGID CASING FOR DIALYZER COIL

Frederick W. Miller, III, Glenmore, Pa., assignor to Extracorporeal Medical Specialties, Inc., King of Prussia, Pa.

Filed Apr. 5, 1973, Ser. No. 348,010
Int. Cl. B01d *31/00*
U.S. Cl. 210—321 1 Claim

1. A dialyzer of the type useful in artificial kidney machines comprising a generally cylindrical inner core member, a dialyzer coil positioned therearound, and a rigid outer casing enclosing the dialyzer coil, the inner core member including dialysis inflow castellations around its lower end and dialysis outflow castellations around its upper end, and a lateral baffle wall to prevent dialysing fluid from flowing through the core and direct the fluid to flow through the inflow castellations to the dialyzer coil, the rigid casing consisting essentially of two pieces including an upper end cap and a lower end cap, each end cap being generally cup-shaped and proportioned for mating engagement with each other at their rim portions and sealed together therearound, the conical sidewall portion of each end cap tapering inwardly from its rim portion to its base portion at an angle so slight as to give the appearance of generally cylindrical walls and to properly control the lateral dimensional features of the dialyzer coil during operation, the base portion of the lower end cap having a downwardly extending central flange adapted for engagement with a dialysis inflow opening of an artificial kidney machine to position the



dialyzer thereon and provide for flow of dialyzing fluid into the dialyzer, the base portion of the upper end cap having aperture means to provide for flow of dialyzing fluid out of the dialyzer in cooperation with the outflow castellations around the upper end of the inner core member.

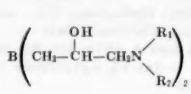
3,853,770
FABRIC SOFTENER COMPOSITIONS

Lili W. Altschuler, Wynnewood, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 53,312, July 8, 1970, abandoned, which is a continuation-in-part of Ser. No. 846,615, July 31, 1969, abandoned. This application July 22, 1971, Ser. No. 165,363
Int. Cl. D06m *13/38*; C11d *1/00*
U.S. Cl. 252—8.8 2 Claims

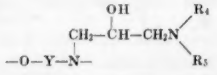
1. A composition for the simultaneous washing and softening of fabrics, consisting essentially of

(A) at least one compound of the formula



where

B is an alkylene radical of 10–20 carbon atoms, an aryl radical of 1–10 benzene rings; an —O—Y—O— radical or a



radical

where

Y is an alkylene radical of 10–20 carbon atoms or an aryl radical of 1–10 benzene rings, and

R_4 and R_5 are alkyl or alkenyl radicals of 13–40 carbon atoms; and

R_1 and R_2 are alkyl or alkenyl radicals of 13–40 carbon atoms; and

B. 10–38%, by weight of (A), of an amphoteric, anionic or non-ionic surfactant.

3,853,771

PROCESS FOR DISPERSING CELLULAR MICRO-ORGANISMS WITH CHELATING AQUEOUS ALKALINE SURFACTANT SYSTEMS

Ted S. Felmann, Phoenix, Ariz.; Hollis B. Carlile, Jr., Hacienda Heights, and Charles F. Blankenhorn, La Habra, both of Calif., assignors to Shell Oil Company, New York, N.Y.

Division of Ser. No. 224,932, Feb. 2, 1972, Pat. No. 3,782,471, which is a continuation-in-part of Ser. No. 144,275, May 17, 1971, abandoned. This application Mar. 29, 1973, Ser. No. 346,236

Int. Cl. E21b *21/00, 21/04*

U.S. Cl. 252—8.55 B **2 Claims**

1. A process for dissolving or dispersing cellular micro-organism materials, comprising, contacting said materials with an aqueous solution containing at least one surfactant effective for dispersing outer wall layers of micro-organism cells, at least one chelating agent effective for dispersing the inner all layers of micro-organism cells, and at least one alkali metal hydroxide effective for enhancing said dispersing actions.

3,853,772

LUBRICANT CONTAINING ALKALI METAL BORATE DISPERSED WITH A MIXTURE OF DISPERSANTS

John Howard Adams, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 9, 1973, Ser. No. 358,749

Claims priority, application Belgium, May 12, 1972, 117452; May 29, 1972, 3434; Canada, May 9, 1972, 141712; France, May 25, 1972, 72.18677; Germany, May 29, 1972, 2225985; Great Britain, June 1, 1972, 25699/72; Italy, May 30, 1972, 25047/72; Japan, May 31, 1972, 47-54233

Int. Cl. C10m *1/40, 1/32, 1/10*

U.S. Cl. 252—18 **11 Claims**

1. A lubricant comprising an oil of lubricating viscosity having dispersed therein from 1 to 60 weight percent, based on the entire composition, of amorphous particles of less than one micron in size of a hydrated alkali metal borate having 0.5 to 4 waters of hydration, said borate being dispersed in said oil by means of a dispersant mixture consisting of 40 to 99 weight percent of a lipophilic anionic surface-active agent which is an alkaline earth metal sulfonate and from 0.1 to 60 weight percent of a lipophilic nonionic surface-active agent which is a succinimide derived from alkenyl succinic acid or anhydride and alkylene polyamines.

3,853,773

ANTI-GUM AND SOLVATING LUBRICANT

Jerry Thomas Martin, Plainview, and Carl Thomas Patros, Rochester, both of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 26, 1972, Ser. No. 317,965

Int. Cl. C10m *1/48*

U.S. Cl. 252—32.7 E **4 Claims**

1. In a lubricating oil comprising a highly compounded mineral oil containing: as an anti-oxidant and corrosion inhibitor, a calcium petroleum sulfonate; as an anti-wear agent, zinc dithiophosphate; as an detergent-dispersant, a polypolar polymer consisting of a nitrogen containing monomer linked to a long chain methacrylate; and as a viscosity index improver, polyisobutylene, the improvement comprising adding to the base oil 25 to 75 percent by volume of a highly refined white mineral oil not exceeding a viscosity of 180 SUS.

3,853,774

PROCESS FOR PREPARING OIL-SOLUBLE BASIC MAGNESIUM SALTS

Richard E. Crocker, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 20, 1972, Ser. No. 316,939

Int. Cl. C10m *1/40*

U.S. Cl. 252—33.4 **12 Claims**

1. The process for preparing oil-soluble basic magnesium salts having a metal ratio of from 5 to 25 comprising contacting, at a temperature from about 10°C to about the decomposition temperature of the reaction mixture, at least one acidic material selected from the group consisting of B_2O_3, CO_2, H_2S, SO_2, HCl, NO_2, PCl_3, ClO_2, $SOCl_2$, BF_3, CS_2, COS, formic acid, oxalic acid, acetic acid, and propionic acid, with a mixture comprising:

1. At least one oil-soluble sulfonic acid or salt thereof susceptible to overbasing;
2. From 5 to 25 equivalents of a basically reacting magnesium oxide per equivalent of said oil-soluble sulfonic acid and salts thereof;
3. Water in an amount from about 0.5 mols to about 10 mols per mol of said magnesium oxide;
4. At least one lower alkanol containing one to six carbon atoms in an amount from about 0.1 mols to about 10 mols per mol of said magnesium oxide;
5. Naphthenic acids havinan average molecular weight from about 150 to about 600 in an amount from about 0.1 equivalents to about 5.0 equivalents per equivalent of said sulfonic acid and salts thereof; and
6. At least one substantially inert organic liquid diluent comprising from about 25 to about 80% by weight of said mixture;

until reaction between the said acidic material and said mixture substantially ceases.

3,853,775

LUBRICANTS

Ralph P. Williams, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 123,111, March 10, 1971, abandoned. This application Feb. 15, 1973, Ser. No. 332,566

Int. Cl. C10m *1/36, 1/38*

U.S. Cl. 252—42.1 **10 Claims**

1. An improved lubricating composition comprising a mineral lubricating oil having incorporated therein a small quantity of an alkyl sulfenyl dialkyl dithiocarbamate having the formula $R—S—S—C(S)—N(R')_2$ wherein R is an alkyl radical having 1–10, inclusive, carbon atoms and R′ is an alkyl radical having 1–5, inclusive, carbon atoms and R and R′ are the same or different, sufficient to improve the high pressure properties and to increase the stability of the so-treated lubricating oil against oxidation and rust.

3,853,776

LOW POUR POINT FLUIDS AND BLENDS CONTAINING SAME

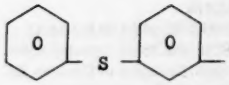
Frank S. Clark, St. Louis, Mo., and Walter Fink, Ruschlikon, Switzerland, assignors to Monsanto Company, St. Louis, Mo.

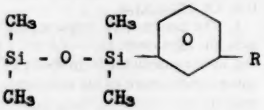
Division of Ser. No. 293,662, Sept. 29, 1972, Pat. No. 3,767,691. This application June 14, 1973, Ser. No. 370,116

Int. Cl. C10m *3/48*

U.S. Cl. 252—46.3 **6 Claims**

1. A low pour point lubricant composition comprising a polyphenyl thioether, a polyphenyl ether-thioether and mixtures thereof and at least one compound of the formula





wherein R represents hydrogen or

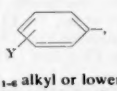
3,853,777
OIL COMPOSITIONS

Hans R. Gersmann, and Geert Van Bruggen, both of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed May 30, 1972, Ser. No. 257,631
Claims priority, application Great Britain, June 2, 1971, 18591/71
Int. Cl. C10m *1/48*
U.S. Cl. 252—46.7 **5 Claims**

1. A lubricant composition consisting essentially of a major amount of a mineral lubricating oil and from about 0.1 to about 10 percent by weight of a compound having the formula

wherein X is oxygen or sulfur, R′ is



Y is hydrogen, chloro, C_{1-6} alkyl or lower alkyl amino, and R is a phenyl group with at least one tert-butyl substituent ortho to the connecting oxygen atom and containing 10 to 30 carbon atoms.

3,853,778
TONER COMPOSITION EMPLOYING POLYMER WITH SIDE-CHAIN CRYSTALLINITY

David A. Buckley, Rochester, N.Y.; Burton B. Jacknow, Monte Sereno, Calif.; Robert Mermelstein, Rochester, N.Y.; Thomas R. Hoffend, Webster, N.Y., and Joseph H. Moriconi, Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1972, Ser. No. 215,936
Int. Cl. C03g *9/00*
U.S. Cl. 252—62.1 **6 Claims**

1. An electrostatographic developer composition comprising about 0.5 to 10 wt. percent of toner particles, said toner particles comprising a polymer selected from the group consisting of a crystalline homopolymer or copolymer having an amorphous backbone and side-chain crystallinity derived by the polymerization of a polymerizable mixture containing at least about 2 wt. percent of a polymerizable monomer having a crystalline alkyl group of at least about 14 carbon atoms and about 90 to 99.5 wt. percent of carrier particles.

3,853,779
LOW FOAMING DETERGENT COMPOSITIONS

Jack T. Inamorato, Westfield, N.J., and Robert T. Hunter, Grand Rapids, Mich., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 260,319, June 6, 1972, abandoned. This application Oct. 29, 1973, Ser. No. 410,502
Int. Cl. C11d *9/10*
U.S. Cl. 252—110 **7 Claims**

1. A low foaming detergent composition comprising
1. about 2 to about 30 percent of a water soluble nonionic or anionic synthetic organic detergent,
2. from about 10 to about 90 percent of a water soluble alkaline phosphate builder salt, and
3. from about 0.5 to about 15 percent of a C_{10} to C_{18} dialkyl or dialkenyl amine.

3,853,780
GRANULAR NON-DUSTING ENZYME PRODUCT FOR DETERGENT USE

John Hinckley Mostow, Metuchen, and Joseph Frank Stima, Edison, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 864,176, Oct. 6, 1969, abandoned. This application Jan. 7, 1972, Ser. No. 216,311
Int. Cl. C11d *3/22, 7/42, 9/40*
U.S. Cl. 252—132 **3 Claims**

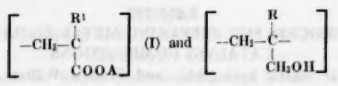
1. A process for making an enzyme concentrate, for use as an additive to detergent compositions to make them enzyme-active, in which, on an enzyme preparation-soap-sugar product basis, from 50 to about 90% by weight of a powdered enzyme preparation, of particles of diameters less than 0.15 millimeter, is dry blended with a mixture of a water-soluble granular soap and a water soluble granular sugar in a soap-sugar ratio of about 1:5 to 5:1, the soap being in finely divided powder form and the sugar being micropulverized, and said blended mixture is compacted under pressure between opposed solid surfaces by roll milling or pressing to form a coherent mass which is then size-reduced to granular form, the granules of which are of particle sizes of up to 40 mesh and contain proteolytic enzyme preparation in an amount sufficient to provide a final washing product having 0.15 to 6 Anson units of activity per hundred grams when incorporated therein in a proportion containing from 0.1 to 4% of powdered enzyme preparation.

3,853,781
WASHING AND CLEANSING COMPOSITION

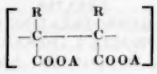
Heinz Haschke; Peter Kuzel, both of Grossauheim; Erich Bader, Hanau; Horst Kruger, Darmstadt; Emil Kerschner, Freigericht, and Arnold Hufnagel, Bischofsheim, all of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt/Main, Germany

Continuation-in-part of Ser. No. 97,482, Dec. 10, 1970, abandoned, and a continuation-in-part of Ser. No. 145,974, May 24, 1971, abandoned. This application Jan. 17, 1973, Ser. No. 324,422
Claims priority, application Germany, Dec. 11, 1969, 1962125; May 23, 1970, 2025238
Int. Cl. C11d *9/26*
U.S. Cl. 252—132 **14 Claims**

1. In a wash or cleaning composition which includes a surface active agent and at least one builder compound, the improvement in which the builder compound comprises a linear or cross-linked polymer or salt thereof which polymer in the main chain has predominantly carbon-to-carbon bonds and wherein the units predominantly have the formula



and wherein a minor amount, relative to the amount of units (I) and (II), of units of the type



may be present and wherein R and R^1 are the same or different and are alkyl having 1 to 6 carbon atoms or hydrogen and wherein R^1 may also be chlorine and wherein A is hydrogen or one valence of a monovalent or polyvalent metal or is ammonium, the said units I, II and IV being arranged in random sequence and the average frequency of the units being such as to provide for a ratio of carboxyl or carboxylate groups to hydroxyl groups between 1.1 and 16 and the minimum degree of polymerization being 3, the said polymers being obtained by oxidative polymerization of acrolein or oxidative copolymerization of (a) acrolein with (b) acrylic acid, an alkyl acrylic acid, a halogenoacrylic acid or an unsaturated polycarboxylic acid.

3,853,782

SILK SCREEN CLEANER COMPOSITION

Edward H. Chang, Burnsville, Minn., assignor to Fremont Industries, Inc., Shakopee, Minn.

Filed Dec. 7, 1972, Ser. No. 312,936

Int. Cl. C11d *3/065*

U.S. Cl. 252—139 **7 Claims**

1. An alkaline aqueous cleaning solution for removing residue from silk screen stencils and having the following formulation:

Component	Percent by Weight
An alkaline earth hydroxide selected from the group consisting of sodium and potassium hydroxides	.3 to 2
Tetrapotassium pyrophosphate	.7 to 4
Sodium silicate solids (Na_2O/SiO_2 = 1:1.6 to 1:3.22)	.5 to 3
Sodium gluconate	.15 to 1
Sodium ligno sulfonate	.05 to .3
Diethylene glycol monobutyl ether	.25 to 2.5
Diethylene glycol monoethyl ether	2 to 20
Surface active agent selected from the group consisting of nonionic and anionic surface active agents	.04 to .4
Balance water	

3,853,783

VANADYL PHTHALOCYANINE SULFONAMIDES AND LASER PROTECTIVE PLASTIC FILTERS CONTAINING THE SAME

Robert Jerome Tucker, Hackettstown, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 165,384, July 22, 1971, abandoned. This application Apr. 9, 1973, Ser. No. 349,509

Int. Cl. F21v *9/00;* **G02b** *5/20;* **G02c** *7/10*

U.S. Cl. 252—300 **6 Claims**

1. An optical filter comprising a thermoplastic polymer substantially transparent to visable light having incorporated therein from 0.001 to 1.0 percent, by weight, of a vanadyl phthalocyanine sulfonamide having the formula:

wherein Pc is the phthalocyanine moiety; R and R′ are lower alkyl and *x* is an integer from 1 to 4; said filter having an optical density of at least 3.

3,853,784

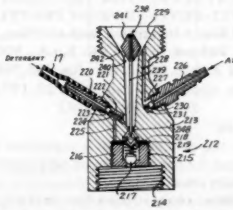
FLOW CONTROL DEVICE

Eugene D. Rogers, 3318 Kennelworth Ln., Bonita, Calif. 92002

Division of Ser. No. 331,261, Feb. 9, 1973, Pat. No. 3,822,217, which is a continuation-in-part of Ser. No. 203,174, Nov. 30, 1971, abandoned, which is a continuation-in-part of Ser. No. 73,324, Sept. 18, 1970, abandoned. This application Apr. 30, 1974, Ser. No. 465,563

Int. Cl. A62c *5/04;* **B01d** *;* **B01f**

U.S. Cl. 252—359 E **5 Claims**



1. A fluid flow-control device comprising a conduit member having an inlet and an outlet end, means to connect said inlet end to a main liquid supply source, said inlet end having a liquid receiving cavity, said conduit member being formed with axial passage means extending from said liquid-receiving cavity toward said outlet end, means in said inlet end defining a relatively small diameter, axial, first venturi passage flaring in size from said cavity, said conduit member being further formed with a relatively wide-flare passage merging with said axial passage means at said outlet end of the conduit member, and flow-regulating means located in said passage means and in said first venturi passage, comprising a free-floating stem member provided with opposite enlarged end portions, one enlarged end portion being located within the inlet end of said first venturi passage, and the other enlarged end portion being located within said wideflare passage.

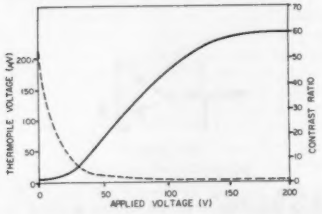
3,853,785
STABLE LIQUID CRYSTAL MIXTURES INCLUDING ANIL-TYPE NEMATIC COMPOUNDS

Mortimer M. Labes, Rosemont, Pa., assignor to Temple University, Philadelphia, Pa.

Continuation-in-part of Ser. No. 189,315, Oct. 14, 1971, Pat. No. 3,827,780. This application Nov. 6, 1972, Ser. No. 303,962

Int. Cl. C09k *3/00*

U.S. Cl. 252—408 **6 Claims**



1. A nematic liquid crystal composition useful in electro-optical devices consisting of a miscible mixture of

a. a first nematic liquid crystal material consisting of the compound N-(o-hydroxy-p-methoxybenzylidene)-p-n-butylaniline, and

b. a second nematic liquid crystal material consisting of the compound N-(p-ethoxy-benzylidene)-p-n-butylaniline

wherein each nematic liquid crystal material is present in an amount sufficient to stabilize and/or broaden the active temperature range of the composition.

3,853,786
SUPPORTED CATALYSTS FOR THE PRODUCTION OF 4-METHYL-PENTENE FROM PROPYLENE

Lucio Forni, and Renzo Invernizzi, both of Milan, Italy, assignors to Societa' Italiana Resin S.I.R. S.p.A., Milan, Italy

Filed Aug. 6, 1973, Ser. No. 385,769

Claims priority, application Italy, Sept. 20, 1972, 29423/72

Int. Cl. B01j *11/82*

U.S. Cl. 252—440 **10 Claims**

1. Process for the production of a supported catalyst containing alkali metal for dimerization of propylene to 4-methyl-1-pentene, characterized in that

a. previously dried support particles are heated in an inert gas atmosphere for at least about 30 minutes to a temperature of at least about 150°C,

b. the support particles obtained in accordance with a) are mixed with a compound of a transition metal that is thermally decomposable at below about 400°C, said compound being one of gold, nickel, chromium, palladium, cobalt or tungsten, and an alkali metal in a quantity such that the total weight of alkali metal and of the transition metal compound, both calculated as the weight of metal, is about 1 to 80 wt. percent based on the weight of the support, the atomic ratio of alkali metal to transition metal being in the range between about 50 : 1 and 1 : 1, and

c. the mixture obtained in accordance with b) is heated for about 1 to 120 minutes to about 150 to 500°C in an inert gas stream with stirring to decompose the transition metal compound.

3,853,787
PROCESS FOR PREPARING METAL ZEOLITE CATALYST COMPOSITIONS

John D. Potts, Springfield, and Francis William Kirsch, Wayne, both of Pa., assignors to Sun Research and Development Co., Philadelphia, Pa.

Filed Aug. 23, 1972, Ser. No. 283,254

Int. Cl. B01j *11/40*

U.S. Cl. 252—455 Z **7 Claims**

1. A process for preparing catalysts which comprises contacting a crystalline zeolite base, containing cation replaceable by ammonium ion, with an aqueous solution consisting essentially of an ammonium metal compound containing catalytic metal in the anion thereof, and a non-metallic soluble ammonium salt.

3,853,788
PROCESS FOR HYDROTREATING CATALYST AND PRODUCT THEREBY

Irvin Ralph Feins, Westport, and John Francis Lindsley, Stamford, both of Conn., assignors to Cyanamid Company, Stamford, Conn.

Int. Cl. B01j *11/40, 11/32*

U.S. Cl. 252—455 R **10 Claims**

1. A process for preparing a hydrotreating catalyst which comprises: preparing a washed alumina hydrogel; slurrying said hydrogel in an aqueous solution of a molybdenum source so as to form a spray-dryer feed; spray-drying the feed thus formed to provide a powder; mix-mulling said powder to provide an extrudable paste, extruding the thus-formed paste; drying and calcining the extrudates; treating the calcined extrudates so as to furnish thereon a cobalt source and urea, said furnish providing an aqueous solution stable with respect to precipitation; dehydrating the thus-treated extrudates; and activating the dehydrated extrudates, the molybdenum source providing from about 8 to 20 weight precent molybdenum expressed as its oxide and the cobalt source providing from about 1 to 8 weight percent cobalt expressed as its oxide, said metal contents being based on the weight of the activated extrudates and said urea being present in said furnish in an amount providing at least about 0.5 mole of urea per mole of cobalt therein.

3,853,789
PREPARATION OF MACROPOROUS ALUMINA EXTRUDATES

John Lawrence Warthen, 306 Chalfonte Dr., Baltimore, Md. 21228; Warren Stanley Briggs, 704 Brantford Ave., Silver Spring, Md. 20904, and Frank George Ciapetta, deceased, late of 1628 Oaklawn Ct., Silver Springs, Md. 20903 (by Carolina Ciapetta, executrix)

Continuation-in-part of Ser. No. 128,422, May 26, 1971, abandoned. This application Mar. 9, 1973, Ser. No. 339,875

Int. Cl. B01j *11/06*

U.S. Cl. 252—463 **4 Claims**

1. A method for preparing mechanically strong macroporous alumina extrudates having a mercury pore volume of about 0.3 to about 0.7 cc/g wherein 40 to 100 percent of the pore volume is contained in pores having a size above 3500A in diameter, and a surface area of about 200 to 400 m^2/g which comprises:

a. preparing a mixture which comprises:

1. 40 to 90 percent by weight gamma alumina powder having a particle size range of about 100 to 200 microns, and

2. 10 to 60 percent by weight alumina monohydrate particles having a size range of about 5 to 65 microns; b. combining said mixture with water to form an extrudable paste;

c. extruding said paste to form cohesive extrudates; and

d. drying and calcining the extrudate to form hard mechanically strong particles.

3,853,790

CATALYSTS FOR THE OXIDATION OF AMMONIA TO NITROGEN OXIDE

Jan Vosolsobe; Rudolf Dohnalek; Bohumil Kadlec; Jiri Michalek; Antonin Simecek; Miroslav Cap, all of Praha, and Miroslav Novak, Ricany, all of Czechoslovakia, assignors to Trust Ceskoslovenskeho prumyslu dusikarenskeho, Praha, Czechoslovakia

Continuation-in-part of Ser. No. 242,216, April 7, 1972, abandoned. This application Aug. 7, 1972, Ser. No. 278,261
Claims priority, application Czechoslovakia, Apr. 7, 1971, 2486-71
Int. Cl. B01j *11/06, 11/22*
U.S. Cl. 252—464 2 Claims

1. A granular catalyst which consists essentially of an alumina body in solid form having particles at least the surfaces of which consist of a spinel in which the metal component of the spinel is selected from the group consisting of cobalt, cobalt-nickel, nickel-manganese, nickel-magnesium and nickel-bismuth, said particles additionally having thereon a film of catalytically active metal oxides selected from the group consisting of cobalt oxide, and combination of nickel oxide with either cobalt oxide, manganese oxide, magnesium oxide, or bismuth oxide, said catalyst having been prepared by heating an alumina body impregnated with metal or metals forming said spinel to a sintering temperature of 1,000°–1,700° C until said alumina body has reached a stable condition and the surfaces of the alumina in the outer periphery of the body have been converted to said spinel, and thereafter impregnating said body with metal salt or salts selected from the metals forming said group of metal oxides and thermally decomposing said metal salt or salts to provide on said spinel a film of catalytically active material of said metal oxides.

3,853,791

OXIDE AND MOLYBDENUM OXIDE ON AN ALUMINA SUPPORT AND CATALYST OBTAINED

Irvin Ralph Feins, Westport, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 6, 1973, Ser. No. 330,169
Int. Cl. B01j *11/22*
U.S. Cl. 252—465 10 Claims

1. A process for preparing a hydrodesulfurization catalyst which comprises: preparing a calcined formed alumina support; treating said support so as to furnish thereon an aqueous solution of (a) a cobalt compound, (b) a molybdenum compound, and (c) urea in an amount at least 0.5 molar with respect to the molar quantity of cobalt furnished, said compounds upon subsequent activation providing the corresponding metal oxides, said furnish providing an aqueous solution stable with respect to precipitation; dehydrating the thus-treated support; and activating the dehydrated support so as to provide a composite containing from about 1 percent to 8 percent cobalt and from about 8 percent to 20 percent molybdenum, said percentages being by weight based on the weight of the activated composite and expressed as the metal oxides.

3,853,792

CATALYTIC METAL OXIDE

Takashi Ohara, Nishinomiya; Michikazu Ninomiya, Kobe; Isao Yanagisawa, Ikeda, and Masahiro Wada, Nishinomiya, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Division of Ser. No. 245,758, April 20, 1972, Pat. No. 3,775,474. This application July 16, 1973, Ser. No. 379,233
Claims priority, application Japan, Apr. 27, 1971, 46-27203
Int. Cl. B01j *11/06, 11/22*
U.S. Cl. 252—467 3 Claims

1. A catalytic oxide consisting essentially of a complex oxide in which the atomic ratio of the meal elements is within the following range:

$$V_aMo_bW_cCr_dCu_e$$

wherein

$14<a$ $24, =12, 4$ $c<20, 1$ $d<10$ and 0 $e<12$.

3,853,793

PRODUCTION OF CARBON ELECTRODES

John Alexander Brown, and Paul Rhedey, both of Arvida, Quebec, Canada, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed Jan. 7, 1972, Ser. No. 216,286
Int. Cl. H01b *1/06;* H01c
U.S. Cl. 252—510 12 Claims

1. Procedure for preparing a carbon electrode paste which comprises an aggregate of coke fines and larger coke bodies in mixture with a pitch binder, said procedure comprising

a. grinding coke dust entrained in and collected from gases discharged from a kiln incident to calcination of coke in the kiln, for breaking up the particles thereof; and

b. mixing the ground coke dust with fully calcined coke fines and larger bodies with said binder to form a paste wherein said ground dust constitutes a portion of the fines fraction of the aggregate, said fully calcined coke comprising coke material calcined in a kiln and removed therefrom, after calcining, separately from gases discharged from the kiln.

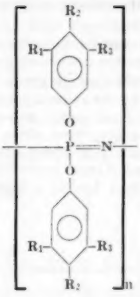
3,853,794

ALKYLARYLOXYPHOSPHAZENE POLYMERS

Kennard A. Reynard, Mentor, and Selwyn H. Rose, Beachwood, both of Ohio, assignors to Horizons Incorporated, a division of Horizons Research Incorporated, Cleveland, Ohio

Filed June 11, 1973, Ser. No. 368,847
Int. Cl. C08g *33/16, 33/02*
U.S. Cl. 260—2 P 9 Claims

1. Poly(alkylaryloxyphosphazenes) characterized by the repeating structure:



where R_1, R_2 and R_3 are each selected from hydrogen and alkyl radicals containing 1 to 12 carbon atoms, with at least one of R_1, R_2, and R_3 being alkyl, and n is from 20 to 50,000.

3,853,795

QUASC-PREPOLYMERIZATION TECHNIQUE FOR PREPARATION OF POLYURETHANE FOAMS

Victor Frederick Jenkins, St. Albans, and Stephen Arthur Lee, Dunstable, both of England, assignors to Laporte Industries Limited, London, England

Continuation-in-part of Ser. No. 253,589, May 15, 1972, abandoned. This application July 13, 1973, Ser. No. 378,834
Claims priority, application Great Britain, May 27, 1971, 17609/71
Int. Cl. C08g *22/48*
U.S. Cl. 260—2.5 AC 10 Claims

1. A process for the preparation of a substantially closed cell high density polyurethane foam which comprises the steps of:

a. preparing a prepolymer from an organic polyol and an organic polyisocyanate.
b. adding to said prepolymer after the formation thereof from 0.02 to 1% by weight of an organo-tin catalyst based on the weight of the prepolymer thereby to obtain a stable liquid prepolymer composition
c. preparing a reactant mixture containing an organic polyol, a polyfunctional cross-linking agent and a blowing agent,
d. incorporating in said reactant mixture from 0.01 to 4% by weight of a tertiary amine catalyst thereby to obtain a stable liquid reactant mixture, and
e. reacting said prepolymer composition with said reactant mixture to form a polyurethane foam.

3,853,796

HIGH STRESS-LOW ELONGATION RUBBER COMPOSITION

Richard C. Oldack, Jackson Township; Charles C. Raines, Canton, and Richard L. Montgomery, Akron, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sept. 7, 1972, Ser. No. 287,191
Int. Cl. C08g *41/04*
U.S. Cl. 260—5 **19 Claims**

1. A high stress-low elongation polymeric composition, comprising; a block copolymer having a nylon polymer constituent blocked to at least one end capped polymer constituent to form the block copolymer, said end capped polymer constituent containing a base polymer constituent connected to a single compound selected from the group consisting of a polyisocyanate and a polyisothiocyanate through one of the isocyanate groups or the isothiocyanate groups, said base polymer made by the anionic polymerization of conjugated diene monomers,

said nylon polymer constituent connected to said end capped polymer through another isocyanate group of said polyisocyanate or another isothiocyanate group of said polyisothiocyanate and produced by the anionic polymerizations of lactams, said weight range of said nylon polymer constituent to said block copolymer ranging from about 25 to about 90% and including from about 15 to about 120% by weight based on the block copolymer of short nylon fibers so as to produce a polymeric composition having a high stress at a very low elongation.

3,853,797

POLYVINYL ACETATE /DEXTRIN/ C TO C POLYHYDRIC ALCOHOLS MATERIAL FOR NOVELTY ITEMS AND ARTS AND CRAFTS APPLICATIONS

Josef Pelzig, 6233 Bluebell Ave., North Hollywood, Calif.

Continuation-in-part of Ser. No. 877,021, Nov. 14, 1969, abandoned, and a continuation-in-part of Ser. No. 194,693, Nov. 1, 1971, abandoned. This application Mar. 26, 1973, Ser. No. 345,214
Int. Cl. C08d *9/06*
U.S. Cl. 260—17.4 ST **32 Claims**

1. A solid plastic composition which is highly elastic and pliable having a pH of about 6 to 8 consisting essentially of:
a. about 3 to 8% dextrin;
b. about 90 to 93.5% dextrin incompatible polyvinyl acetate emulsion being composed of 35 to 55% solids and 65 to 45% water; and
c. about 0.5 to 2% of an alcohol selected from the group consisting of polyhydric alcohols in the series C_3 to C_6.

3,853,798

BITUMINOUS COMPOSITION

Manfred Wolfgang Oelsner, Hamburg, and Erich Gunther Zenke, Halstenbek, both of Germany, assignors to The British Petroleum Company Limited, London, England

Filed Mar. 22, 1972, Ser. No. 236,984
Claims priority, application Germany, Mar. 31, 1971, 2115475
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 AS **10 Claims**

1. A process for the production of an asphaltic composition which comprises
1. forming a mixture of:
10–85% wt., based on the total mixture, of an asphalt
5–25% wt., based on the total mixture, of an elastomer which is a copolymer of ethylene, propylene and a cyclic unsaturated hydrocarbon having more than one olefinic double bond and having also an endocyclic bridge containing at least one methylene group, and
10–85% wt., based on the total mixture, of a flux oil for extending the elastomer, and
2. blowing the mixture at 180°–260°C with a gas which contains elemental oxygen, the elastomer being in latex form when added to the asphalt.

3,853,799

BITUMINOUS COMPOSITIONS PREPARED BY BLOWING BLENDS OF BITUMEN, AROMATIC EXTRACT AND EPT RUBBER

Rolf-Dieter Behling; Manfred Oelsner, both of Hamburg, and Gunther Zenke, Halstenbek, all of Germany, assignors to The British Petroleum Company Limited, London, England

Filed Sept. 10, 1970, Ser. No. 71,196
Claims priority, application Germany, Sept. 17, 1969, 1946999
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 AS **10 Claims**

1. A method of preparing an asphaltic composition suitable for use as a roof surfacing material, which comprises
1 forming a mixture of:
23–85% wt, based on the total mixture, of an asphalt which is a distillation residue derived from crude petroleum,
2–25% wt, based on the total mixture, of a rubber which is a copolymer of (a) monolefines and (b) cyclic hydrocarbons with an endocyclic bridge and at least two olefinic double bonds,
10–75% wt, based on the total mixture, of a flux oil which is an aromatic extract for extending the rubber,
0–4 parts by weight sulphur per 100 parts by weight of the rubber, and
0–3% wt, based on the total mixture, of a polyolefine selected from the group consisting of polyethylene and polypropylene, and
2. blowing the mixture with a gas which contains elemental exygen, at a temperature of 150° – 300°C.

3,853,800

PROCESS FOR PREPARING A MIXTURE CONTAINING A BINDER MATERIAL AND POLYOLEFIN

Paul Haberl, A-2821 Klein Wolkersdorf Nr. 129, Niederoesterreich, Austria

Filed Mar. 20, 1973, Ser. No. 342,942
Claims priority, application Austria, Jan. 5, 1973, 93/73
Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 AS **22 Claims**

1. A process for preparing a mixture for constructional purposes, comprising the steps of mixing a composition consisting essentially of a binder material selected from the group consisting of bitumen and asphalt, with 1 to 10 percent by weight, based on the weight of the binder material of a polyolefin selected from the group consisting of polyethylene and polypropylene, wherein the binder material is heated to a liquid state and the polyolefin is finely dispersed therein, and

wherein said polyolefin is a reclaimed polyolefin having various molecular weights, which is added to the binder material in the form of small particles which have a maximum dimension of more than 0.3mm and are provided with finely particulated contaminating material adhering to said small particles.

3,853,801

ELECTROPHORETIC COATING COMPOSITIONS

Akira Tominaga, and Norio Nikaido, both of Hiratsuka, Japan, assignors to Kansai Paint Company Limited, Hyogo-ken, Japan

Filed July 31, 1972, Ser. No. 276,295
Claims priority, application Japan, Aug. 5, 1971, 46-59443
Int. Cl. C08g *51/24*
U.S. Cl. 260—29.3 **11 Claims**

1. An electrophoretic coating composition which comprises a resinous binder dispersed in an aqueous medium; said resinous binder being a mixture of a modified butadiene polymer neutralized with a base and a methylolated phenol resin which is water-dispersible resole type phenol resin containing 1 to 3 phenol nuclei and at least one methyol group in an amount of 3 to 50 weight parts based on 100 weight parts of modified butadiene polymer; said modified butadiene polymer being the reaction product of a starting mixture of 1,2-polybutadiene, 1,4-polybutadiene in a weight ratio of 3 to 9 : 7 to 1 and unsaturated oil compound having an iodine value of at least 100 in an amount of 10 to 60 weight percent based on the total weight of the polybutadiene mixture and the unsaturated oil compound with at least one α,β-unsaturated dicarboxylic acid and anhydrides thereof selected from the group consisting of maleic acid, maleic anhydride, fumaric acid, itaconic acid and itaconic anhydride, in an amount of 7 to 40 weight parts based on 100 parts of the starting mixture; said 1,2-polybutadiene containing at least 70 percent of vinyl bond and having a number average molecular weight of 500 to 5,000 and an iodine value of at least 350; said 1,4-polybutadiene containing at least 90 percent of 1,4-bond and having a number average molecular weight of 500 to 10,000 and an iodine value of at least 400; said unsaturated oil compound being at least one species selected from the group consisting of (1) a natural oil, (2) a natural oil fatty acid, (3) an ester of a natural oil fatty acid with a polyhydric alcohol having 2 to 6 hydroxyl groups in the molecule, (4) an ester of a natural oil fatty acid with an epoxy resin having a number average molecular weight of 200 to 2,000, (5) an ester of a natural oil fatty acid with a polyol resin having a number average molecular weight of 200 to 2,000, (6) a modified oil prepared by treating the above oil (1) thermally or chemically and (7) a dimer of natural oil fatty acid.

3,853,802

UNHYDROLYZED POLYACRYLAMIDE AND PARTIALLY HYDROLYZED POLYACRYLAMIDE MOBILITY CONTROL AGENT

Charles J. Norton, and David O. Falk, both of Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Division of Ser. No. 163,642, July 19, 1971, Pat. No. 3,743,018. This application Feb. 26, 1973, Ser. No. 335,969
Int. Cl. C02b *9/00*; **C08f** *29/00*
U.S. Cl. 260—29.6 WB **5 Claims**

1. Compositions comprising aqueous solutions of about 10 to about 10,000 parts per million of partially hydrolyzed polyacrylamide and about 10 to about 10,000 parts per million of unhydrolyzed polyacrylamide, wherein the partially hydrolyzed polyacrylamide polymer is hydrolyzed from about 0.5 to about 75 percent.

3,853,803

METHOD OF PREPARING A CATIONIC ACRYLIC ELECTRODEPOSITABLE INTERPOLYMER

Carl C. Anderson, Hartland, Wis., and Lance C. Sturni, McKeesport, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 110,268, Jan. 27, 1971, abandoned. This application Apr. 2, 1973, Ser. No. 347,021
Int. Cl. C08f *1/13, 45/24*
U.S. Cl. 260—29.6 TA **12 Claims**

1. A method of preparing a cationic electrodepositable, non-gelled, carboxyl-containing, thermosetting acrylic interpolymer comprising interpolymerizing the following monomers:

A. from about 40 to about 94 percent by weight of an alkyl ester of acrylic or methacrylic acid;

B. from about 5 to about 25 percent by weight of an alpha, betaethylenically unsaturated amino-alkyl monomer, wherein said amino group is selected from the class consisting of a secondary amine and a tertiary amine;

C. from about 1 to about 15 percent of a monoethylenically unsaturated carboxylic acid; and

D. from 0 to about 30 percent by weight of a copolymerizable ethylenically unsaturated monomer,

wherein said percents by weight are based on the solids content of the interpolymer, and wherein the interpolymerization is carried out in the presence of an acid solubilizing agent, wherein said acid has an ionization constant greater than the ionization constant of said unsaturated carboxylic acid, and is present in an amount sufficient to protonate from about 25 to about 200 percent of the amine groups of said interpolymer.

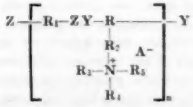
3,853,804

IONIC BLOCK ELASTOMERIC POLYMERS

Shiao-Ping S. Yen, and Alan Rembaum, both of Altadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 63,722, Aug. 14, 1970, Pat. No. 3,755,218. This application July 16, 1973, Ser. No. 368,475
Int. Cl. B44d *1/09*; **C08g** *51/44*; **C08k** *1/40*
U.S. Cl. 260—32.6 N **10 Claims**

1. A polymeric solution consisting essentially of a polymer of the formula:



where R and R_2 are lower alkylene, R_1 is a liquid prepolymer having a molecular weight from 400 to 6,000 selected from the group consisting of polyether, polyester, silicone, polyurethane and polyamide, R_3, R_4 and R_5 are hydrogen, lower alkyl, aryl, aralkyl or lower alkenyl;

Z and Y are coreactive condensation groups;

ZY is the residue of the condensation of Z and Y; and

n is an integer greater than 2 and A^- is an anion selected from the group consisting of halogen, polystyrene sulfonate and polyacrylates;

dissolved in a solvent system of a mixture of primary or secondary alkylamine and a member selected from the group consisting of dioxane, acetone, tetrahydrofuran and dimethylformamide.

3,853,805

SILICONE ELASTOMERIC MATERIAL

Darrow L. Miller, Los Angeles, and David H. Kaelble, Thousand Oaks, both of Calif., assignors to North American Rockwell Corporation, Los Angeles, Calif.

Filed Nov. 10, 1972, Ser. No. 305,409
Int. Cl. C08g 51/04
U.S. Cl. 260—37 SB 29 Claims

1. A strong, highly flexible and compliant cured silicone elastomer having wettability characteristics with respect to the surface of a substrate, comprising a cured mixture of (a) a first siloxane polymer selected from the group consisting essentially of a curable dimethyl polysiloxane and a curable methyl phenyl polysiloxane having a ratio of methyl to phenyl groups of at least 8:1, said first siloxane polymer having a molecular weight ranging from about 6,000 to about 10,000, (b) a second siloxane polymer selected from the group consisting essentially of a curable dimethyl polysiloxane and a curable methyl phenyl polysiloxane having a ratio of methyl to phenyl groups of at least 8:1, said second siloxane polymer having a molecular weight ranging from about 170,000 to about 300,000, and (c) a third siloxane polymer selected from the group consisting essentially of a nonreactive linear dimethyl polysiloxane and a nonreactive linear methyl phenyl polysiloxane having a ratio of methyl to phenyl groups of at least 8:1, said third siloxane polymer having a molecular weight ranging from about 1,500 to about 5,000; said mixture containing about 30 to about 60% of said first siloxane polymer, about 30 to about 60% of said second siloxane polymer and about 4 to about 20% of said third siloxane polymer, by weight.

3,853,806

HETEROGENEOUS MELT HYDROLYSIS OF OXYMETHYLENE COPOLYMERS

Michael D. Golder, 2441 Webb Ave., Bronx, N.Y. 10468

Continuation-in-part of Ser. No. 247,625, April 26, 1972,. This application Apr. 12, 1973, Ser. No. 350,427
Int. Cl. C08g 51/04
U.S. Cl. 260—37 AL 13 Claims

1. In an extruder process for the stabilization of a normally solid oxymethylene copolymer having a melting point above about 150°C., the molecules of said copolymer containing from 60 to 99.6 mol percent of comparatively unstable monomeric oxymethylene units interspersed with comparatively stable monomeric —OR— units wherein R is a divalent radical containing at least two carbon atoms directly linked to each other and positioned in the polymer chain between the two valences, with any substituents on said R radical being inert, at least part of the terminal portions of said molecules comprising said unstable monomeric units, whereby said copolymer is introduced into a reaction zone with from about 2 to about 25 weight percent, based on the copolymer, of a reactant selected from the class consisting of water, alcohols, and mixtures thereof, the improvement which comprises:

a. forming a system comprising molten copolymer and vaporous reactant in said zone by maintaining the reaction zone at a temperature above melting point of the copolymer and at a pressure sufficient to maintain the copolymer in a molten state and the reactant in a vaporous state, and

b. reacting the molten copolymer with the reactant under the above conditions of temperature and pressure for a period of time in the range of from about 0.1 to about 15 minutes to remove unstable monomeric oxymethylene units from the terminal portion of the copolymer molecules so that at least 90 percent of the resulting polymeric chains of the molecules are terminated by the stable monomeric units.

3,853,807

HEAT RESISTANT DYES FOR POLYESTER FILM PRODUCTS

C. Shelburn Hunter, 1669 Lake Ave., Rochester, N.Y. 14650

Division of Ser. No. 146,501, May 24, 1971, Pat. No. 3,822,132, which is a continuation-in-part of Ser. No. 822,032, May 5, 1969, abandoned. This application Apr. 9, 1973, Ser. No. 349,603
Int. Cl. C08g 51/14
U.S. Cl. 260—40 R 18 Claims

1. A colored polyester film article having a thickness of from about 0.5 to about 30 mils, an optical density of at most about 0.5, and a uniform, approximately neutral color; said film article containing a blend of dyes, which blend consists essentially of the red dye 2,3-dihydro-3-methyl-2-oxo-6-p-toluidino-3-azabenzanthrone and the green dye 1,4-dihydroxy-5,8-di-p-toluidino anthraquinone.

3,853,808

REINFORCED POLYPROPYLENE COMPOSITION

Hiroshi Kishikawa; Hiroshi Katsuki, and Takayuki Terazawa, all of Osaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 20, 1972, Ser. No. 246,020
Claims priority, application Japan, Apr. 21, 1971, 46-26261
Int. Cl. C08f 45/10
U.S. Cl. 260—42.18 7 Claims

1. A peroxide free-reinforced polypropylene composition comprising polypropylene, glass fibers and a bismaleimide, the proportion of the said glass fibers ranging from about 10 to 40 percent by weight of said composition and the proportion of said bismaleimide ranging from about 0.01 to 3 percent by weight of said composition.

3,853,809

MIXTURES OF PARTICULATE FLUORINATED POLYMERS AND RUBBERS

Jon W. Martin; Jeffrey L. Bell, and John F. Jones, all of Orange, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 230,086, Feb. 28, 1972, abandoned. This application July 16, 1973, Ser. No. 379,894
Int. Cl. C08c 11/14; C08f 29/16
U.S. Cl. 260—42.37 4 Claims

1. A peroxide-cured, elastomeric, organic rubber base composition comprising:

A liquid derived 1, 2-polybutadiene having a number average molecular weight range from about 500–10,000 and >80% butadiene groups in the vinyl configuration: 2–35% by volume of the total composition;

Particulate fluorinated polymer selected from the class consisting of: polytetrafluoroethylene, polychlorotrifluoroethylene, polyvinylfluoride, polyperfluorobutadiene, polyvinylidene fluoride and copolymers of vinylidene fluoride and hexafluoropropylene: 5%–80% by weight in the polybutadiene polymer;

The said composition formed by predispersing the fluorinated polymer into the liquid polybutadiene to form a paste;

mixing the paste in the organic rubber base; and

curing the mixture with a peroxide catalyst.

3,853,810

NICKEL SALTS OF ARYLSULFONIC ACIDS AS ULTRAVIOLET STABILIZERS FOR LIGHT SENSITIVE POLYMERS

Don A. Plank, Baytown, Tex., assignor to Exxon Research & Engineering Company, Linden, N.J.

Filed Oct. 16, 1972, Ser. No. 298,060
Int. Cl. C08f *45/62*; **C08g** *51/62*
U.S. Cl. 260—45.75 N **13 Claims**

1. A substantially white polymer composition exhibiting outstanding resistance to ultraviolet degradation which comprises in combination:

a major portion of an ultraviolet-sensitive polymer;

at least one antioxidant stabilizer system for said polymer; and,

sufficient colorless, light green or pale yellow nickel aryl sulfonate, to measurably retard the ultraviolet sensitivity of said polymer wherein said sulfonate has from one to ten aryl groups, one to ten aliphatic substituents on said aryls, said aliphatic substituents having a total of from one to one hundred carbon atoms.

3,853,811

FLAME RESISTANT ETHYLENE-CHLOROTRIFLUOROETHYLENE COPOLYMER COMPOSITIONS

Swayambu Chandrasekaran, East Orange, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed May 7, 1973, Ser. No. 358,210
Int. Cl. C08f *45/56*, *45/62*
U.S. Cl. 260—45.75 K **9 Claims**

1. A composition comprising a copolymer of ethylene and chlorotrifluoroethylene, said copolymer containing between about 40 to about 60 mol percent ethylene units and correspondingly between about 60 and about 40 mol percent of chlorotrifluoroethylene units, and an effective amount of a flame retardant additive selected from the group consisting of tin oxides, tin phosphates, stannous oxalate and mixtures thereof.

3,853,812

MIXED AMINE-PHENOL HARDENERS FOR EPOXY RESINS

Deitrich Helm, Unna, Germany, assignor to Schering AG, Berlin & Bergkamen, Germany

Filed Dec. 26, 1972, Ser. No. 318,109
Claims priority, application Germany, Jan. 7, 1972, 2200717
Int. Cl. C08g *30/14*
U.S. Cl. 260—47 EC **3 Claims**

1. An adduct formed by the admixture of

1. an association product comprising, in admixture,

a. a liquid polyamine having 3 – 5 amino hydrogen atoms, selected from the group consisting of N-aminoalkyl piperazines and amines of aliphatic, cycloaliphatic, and araliphatic hydrocarbons and ether-hydrocarbons;

b. a liquid primary monoamine of an aliphatic, cycloaliphatic, or araliphatic hyrocarbon; and

c. a liquid alkylmonophenol, said mixture comprising from 0.3 to 3 equivalents of monoamine amino hydrogen per equivalent of polyamine amino hydrogen and 0.25 to 1 equivalent of alkylmonophenol per equivalent of total amino nitrogen; with

2. from 10 to 30 equivalent percent, based on the total amino hydrogen in said association product, of a member selected from the group consisting of liquid polyglycidyl ethers and liquid polyglycidyl esters.

3,853,813

POLYIMIDE PRECURSOR AND METHOD AND COMPOSITION FOR PREPARING IT

Leonard E. Edelman, and William M. Alvino, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 24, 1973, Ser. No. 363,771
Int. Cl. C08g *20/32*
U.S. Cl. 260—47 CB **27 Claims**

1. A method of making a soluble polyimide precursor comprising:

1. preparing a composition which comprises:

(a) a dianhydride and a tetracarboxylic acid in the proportions of about 50 to about 70 mole percent dianhydride and about 30 to about 50 mole percent tetracarboxylic acid;

(b) a stoichiometric amount of an aromatic diisocyanate; and

(c) a solvent for said dianhydride, said tetracarboxylic acid, said aromatic diisocyanate, and said polyimide precursor in an amount sufficient to make a solution having a solids content of about 12 to about 25 percent;

(2) heating said composition at about 30 to about 70°C until the evolution of carbon dioxide substantially ceases; and

(3) heating said composition at about 30 to about 100°C until its viscosity is about Z to about Z6 on the Gardner-Holdt viscosity scale at 18 percent solids.

3,853,814

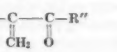
PHOTODEGRADABLE POLYMERS OF METHYL METHACRYLATE AND UNSATURATED KETONES

James Edwin Guillet, 31 Sagebrush Ln., Don Mills, Ontario, Canada

Continuation-in-part of Ser. No. 135,424, April 19, 1971, Pat. No. 3,753,952, which is a continuation-in-part of Ser. No. 763,980, Sept. 30, 1968, abandoned. This application Apr. 23, 1973, Ser. No. 353,415
Int. Cl. C08g *15/00*
U.S. Cl. 260—63 R **5 Claims**

1. Copolymers of methyl methacrylate and an unsaturated ketone selected from the group consisting of methylvinyl ketone, ethylvinyl ketone, propylvinyl ketone, isopropyl vinyl ketone, butylvinyl ketone, methyl isopropenyl ketone, ethyl isopropenyl ketone and phenyl vinyl ketone, and containing from 0.02 to 2 weight per cent of ketone groups, said copolymers being photodegradable upon exposure to ultra violet radiation.

5. Copolymers of methyl methacrylate or methyl acrylate, and an unsaturated ketone of formula



where R′ represents a hydrogen atom or an alkyl group having from 1–6 carbon atoms, and R″ represents an alkyl group, an alkenyl group or an aryl group, having from 1–9 carbon atoms, said copolymer containing from 0–02 to 2 weight per cent of ketone groups, said copolymers being photodegradable upon exposure to ultraviolet radiation.

3,853,815

THERMOSETTING CYCLIZED POLYDIENE RESINS

Hyman R. Lubowitz, Hawthorne, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Continuation-in-part of Ser. No. 64,611, Aug. 7, 1970, abandoned. This application May 2, 1973, Ser. No. 356,705
Int. Cl. C08g *17/003*, *17/10*
U.S. Cl. 260—63 R **15 Claims**

1. A hard thermoset resin which is a reaction product of the ratio of (1) one equivalent of a polydiene having (i) polyfunctional groups selected from the group consisting of hydroxyl,

amino, and mercapto, and (ii) a predominant amount of pendant vinyl groups on alternate carbon atoms of the polydiene backbone; (2) one gram mole of a carboxylic acid adduct forming aliphatic or aromatic acid anhydride capable of reacting with the polyfunctional groups of the polydiene; (3) one equivalent of a polyfunctional aliphatic or aromatic chain extender capable of reacting with the carboxylic acid adduct; and (4) a peroxide free radical initiator.

3,853,816
WATER-SOLUBLE THERMOSETTING GLYOXALATED CARBAMOYLALKYL ALKYLENEAMINO POLYMERS AND PAPER HAVING A CONTENT THEREOF

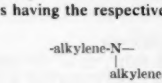
Laurence Lyman Williams, Stamford, and Anthony Thomas Coscia, Norwalk, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. Nos. 471,463, July 12, 1965, abandoned, and Ser. No. 745,486, July 17, 1968, Pat. No. 3,556,932, and a continuation of Ser. No. 107,457, Jan. 18, 1971, abandoned. This application Aug. 20, 1973, Ser. No. 389,831

Int. Cl. C08g *9/04, 9/20*

U.S. Cl. 260—72 R **5 Claims**

1. A water-soluble cationic polymer consisting essentially of N-carbamoylalkyl alkyleneamino linkages and glyoxalated N-carbamoylalkyl alkyleneamine linkages, said latter linkages being sufficiently numerous that the polymer is thermosetting, said linkages having the respective theoretical formulae



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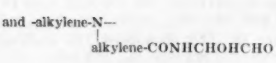


3,853,817
TIN CONTAINING ESTERIMIDE POLYMER RESINS AND METHOD OF FORMING

Richard Francis Weddleton, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 154,184, June 17, 1971, abandoned. This application June 8, 1973, Ser. No. 368,178

Int. Cl. C08g *20/32, 17/04*

U.S. Cl. 260—75 N **11 Claims**

1. A method of forming branched thermosetting esterimide polymer resin powder suitable for deposition atop an electrical conductor comprising preparing a polyester by reacting at least one di- or trifunctional polyhydric alcohol and at least one polycarboxylic acid or dialkyl ester thereof selected from the group consisting of isophthalic, terephthalic, benzophenone dicarboxylic and mixtures of the foregoing with up to 50% by weight of an acid or alkyl ester thereof selected from the group consisting of succinic, trimesic, hemimellitic, trimellitic, orthophthalic, tetrachlorophthalic, sebacic, hexachloroendomethylene tetrahydrophthalic in the presence of a difunctional ester forming organotin compound to produce a hydroxy terminated polyester containing between 0.4 and 2% by weight tin atoms in the polymer backbone, forming a polyimide by reacting a diamine and an aromatic carboxylic anhydride containing at least one additional carboxylic group, preparing an esterimide polymer by reacting said polyimide with said tin containing hydroxy terminated polyester to obtain a branched thermosetting esterimide resin containing tin atoms in the polymer backbone, said resin containing by weight 70–60% polyester and 30–40% polyimide and grinding said branched esterimide resin to a particle size between approximately 10 and 150 micrometers for powder deposition atop a conductor.

3,853,818
AMINOBORATE ESTERS AS POLYURETHANE CATALYSTS

Ibrahim S. Bechara, Boothwyn, and Dewey G. Holland, Chadds Ford, both of Pa., assignors to Air Products and Chemicals, Inc., Wayne, Pa.

Filed Jan. 22, 1973, Ser. No. 325,912

Int. Cl. C08g *22/38, 22/46*

U.S. Cl. 260—75 NC **8 Claims**

1. In the method of preparing polyurethane compositions from formulations comprising a precursor of at least one polyol having a minimum of two active hydrogen atoms per molecule, a reactive isocyanate, and a catalyst, the improvement in which the catalyst comprises an effective activating amount of an aminoborate orthoester of the formula:

$B(L)_y(OR)_{3-y}$

where

L is $(OCHR'CH_2)_nN(R'')_2$

y is an integer from 1 to 3,

n is an integer from 1 to 2,

R is an independently selected alkyl radical of 1 to 4 carbon atoms,

R' is a radical independently selected from the group consisting of hydrogen,

CH_3 and $CH_2N(CH_3)_2$, and

R'' is a radical independently selected from the group consisting of an alkyl group of 1 to 2 carbon atoms and an aryl radical.

3,853,819
FLAME RESISTANT THERMOPLASTIC POLYESTERS

Walter Herwig, Neuenhain/Taunus, and Hans-Jerg Kleiner, Bad Soden, both of Germany, assignors to Farbweker Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed July 19, 1973, Ser. No. 380,746

Claims priority, application Germany, July 22, 1972, 2236038; July 22, 1972, 2236039

Int. Cl. C08g *17/133*

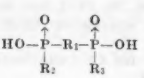
U.S. Cl. 260—75 P **3 Claims**

1. A polycondensation product, consisting essentially of the reaction product of

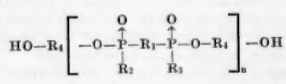
a. 55 to 65 percent by weight of terephthalic acid or the ester forming derivatives thereof, optionally in admixture with up to 5 percent by weight of other aliphatic or aromatic dicarboxylic acids,

b. 20 to 33 percent by weight of ethylene glycol or 1,4-butane-diol optionally in admixture with up to 5 percent by weight of other diols, and

c. 3 to 20 percent by weight of bifunctional diphosphinic acids of the formula



and/or monomeric or oligomeric bifunctional diphosphinic acid esters of the formula



in which R_1 is saturated straight chain, branched chain, or cyclic alkylene having of from 1 to 15 carbon atoms, phenylene, biphenylene, or phenylalkylene having up to 6 carbon atoms in the alkyl group, R_2 and R_3 are identical or different alkyl or cycloalkyl groups having up to 6 carbon atoms, phenyl, or benzyl, R_4 represents a saturated straight chain,

branched chain, or cyclic alkylene having of from 2 to 15 carbon atoms and n is a whole number of from 1 to 30.

3,853,820
BLENDS OF LINEAR WATER-DISSIPATABLE POLYESTERS AND ALIPHATIC OR CYCLOALIPHATIC DICARBOXYLIC ACIDS

Raymond N. Vachon, Kingsport, Tenn., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 23, 1973, Ser. No. 381,815
Int. Cl. C08g *17/06;* **D06m** *15/00*
U.S. Cl. 260—75 T **6 Claims**

1. Composition comprising, based on the weight of the composition, a blend of components I and II as follows:

I. from about 60 to about 95 weight percent of a linear, water-dissipatable polyester derived essentially from components (A), (B) and (C) as follows:

A. at least one aliphatic, cycloaliphatic or aromatic dicarboxylic acid,

B. at least one diol, at least 20 mole percent of said diol component being a poly(ethylene glycol) having the formula $H—OCH_2CH_2—_n—OH$ wherein n is an integer of from 2 to about 14, and

C. at least one difunctional dicarboxylic acid sulfomonomer containing a $—SO_3M$ group attached to an aromatic nucleus, wherein M is hydrogen, or Na^+, Li^+, K^+, or a combination thereof, said sulfomonomer component constituting at least about 8 mole percent to about 45 mole percent of the sum of the moles of said components (A) and (C), and

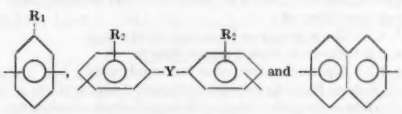
II. from about 40 to about 5 weight percent of a saturated aliphatic or cycloaliphatic dicarboxylic acid having from 6 to 12 carbon atoms.

3,853,821
SOLID STATE POLYMERIZATION OF POLYESTERS IN THE PRESENCE OF A DIISOCYANATE

Abdel-Hadi Sid-Ahmed, Akron, and William C. Tung, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 1, 1974, Ser. No. 465,984
Int. Cl. C08g *22/10, 22/26*
U.S. Cl. 260—75 NE **5 Claims**

1. In a process for preparing polyester resin having an intrinsic viscosity of at least 1.0 by solid state polymerization of melt polymerized polyester resin prepared by esterification or transesterification of a dicarboxylic acid or C_1 to C_4 alkyl ester thereof with a glycol of the series $HO(CH_2)_nOH$ where n is an integer ranging from 2 to 10 and polymerization of the esterification or transesterification product, the improvement which comprises adding to said melt polymerized polyester resin prior to carrying out the solid state polymerization thereof from 0.1 to 2.0 percent by weight of an organic aromatic diisocyanate corresponding to the formula O=C=N—R—N=C=O where R is a divalent aromatic radical selected from the group consisting of radicals of the formulae



where R_1 is selected from the group consisting of hydrogen atom and alkyl radicals containing from 1 to 10 carbon atoms, R_2 is selected from the group consisting of hydrogen atom, alkyl radicals containing from 1 to 10 carbon atoms and alkoxy radicals containing from 1 to 10 carbon atoms and Y is selected from the group consisting of a direct bond and methylene radical, said percent by weight of the organic aromatic diisocyanate being based on the weight of the melt polymerized polyester resin.

3,853,822
POWDERED STOVING LACQUER

Gerd Brod, Grossauheim; Wilfried Felber, Grosswelzheim; Horst Leistner, Bruchkobel-Oberissigheim, and Gerhard Morlock, Grossauheim, all of Germany, assignors to Deutsche Gold-und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Filed July 24, 1973, Ser. No. 382,226
Claims priority, application Germany, July 26, 1972, 2236513
Int. Cl. C08g *22/06*
U.S. Cl. 260—77.5 CR **26 Claims**

1. A powdered stoving lacquer comprising:

A. an acrylic resin reaction product from the free radical substance polymerization of a monomer mixture comprising:

a. about 35 – 60 percent by weight, based on the weight of the monomer mixture, of at least one ester of methacrylic acid, the homopolymerization product of which has a glass transition temperature of at least about 80°C,

b. about 5 – 40 percent by weight, based on the weight of the monomer mixture, of at least one ester of acrylic acid or methacrylic acid, the homopolymerization product of which has a glass transition temperature below about 40°C,

c. about 20 – 40 percent by weight, based on the weight of the monomer mixture, of at least one hydroxyalkyl ester of acrylic acid or methacrylic acid, and

d. about 0 – 10 percent by weight, based on the weight of the monomer mixture, of at least one copolymerizable monomer selected from the group consisting of styrene, acrylonitrile, acrylamide, diacetone acrylamide, methacrylic acid and acrylic acid, and

e. about 0.5 – 2.5 percent by weight, based on the total weight of the monomer mixture, of at least one thioglycolic acid ester of a bi-, tri- or tetravalent alcohol;

and

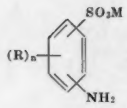
B. at least one aliphatic, cycloaliphatic or araliphatic diisocyanate or a monoadduct of such diisocyanate with a multivalent alcohol, the isocyanate groups in each case being blocked with a lactam having about 4 – 12 carbon atoms in the ring, in an amount of about 0.2 – 0.6 equivalents of isocyanate groups based on the content of hydroxyl groups in the acrylic resin.

3,853,823
PREPARATION OF AMINOBENZENESULFONATE-MODIFIED POLYAMIDES

James W. Cleary, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 177,426, Sept. 2, 1971, abandoned. This application June 14, 1973, Ser. No. 370,155
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **3 Claims**

1. A process for preparing a fiber forming modified aliphatic polycarbonamide wherein amide linkages and terminal sulfonate groups are integral parts of a polymer chain consisting essentially of reacting under polymerization conditions at a temperature of 360°F to 620°F (a) a dicarboxylic acid and a diamine or a salt of a dicarboxylic acid and a diamine and (b) 0.05 to 4 mole per cent based on the moles of recurring amide linkages in said polycarbonamide of at least one basic dyeability modifier having the formula



wherein M is an alkali metal, R is an alkyl group having 1 to 4 carbon atoms and n is an integer having a value within the range of 0 to 2, in the presence of (c) 50–300 mole per cent of an alkali metal hydroxide per mole of said alkali metal salt.

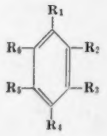
3,853,824

POLY(ARYLENE SULFIDE) POLYMERS

Dale O. Tieszen, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 19, 1973, Ser. No. 398,573
Int. Cl. C08g *25/00*
U.S. Cl. 260—79 **9 Claims**

1. A method of coating which comprises applying to an article to be coated a composition comprising a poly(arylene sulfide) polymer and from about 3 to 10 percent by weight of said polymer, a sulfur-containing compound of the formula



in which not more than four of the positions occupied by R_1–R_6 contain hydrogen, from 1 to 3 of the positions occupied by R_1–R_6 have a substituent R'SH group in which R' is an alkylene radical of 1 to 3 carbon atoms and from 0 to 5 of the positions occupied by R_1–R_6 are filled by alkyl groups having 1 to 12 carbon atoms.

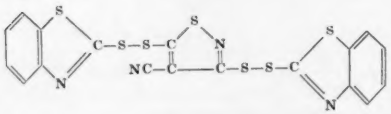
3,853,825

CYANOISOTHIAZOLYL BIS(THIOBENZOTHIAZOLES)

John Joseph D'Amico, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Apr. 16, 1973, Ser. No. 351,143
Int. Cl. C08c *11/62*; C08f *27/06*
U.S. Cl. 260—79.5 R **4 Claims**

1. A composition comprising sulfur vulcanizable diene rubber and a vulcanizing amount of a compound of the formula



3,853,826

HIGH PIPERYLENE RESIN WITH BORON CATALYST

David R. St. Cyr, Uniontown, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 192,651, Oct. 26, 1971, abandoned. This application Sept. 14, 1973, Ser. No. 397,469
Int. Cl. C08f *3/16*, *15/04*, *15/40*
U.S. Cl. 260—80.7 **5 Claims**

1. A hydrocarbon derived resin having the structure characterized by softening point in the range of about 10°C to about 40°C and comprising from about 95 to about 100 weight percent units derived from piperylene and correspondingly up to about 5 weight percent units derived from 2-methyl-2-butene prepared by the method which comprises polymerizing a mixture which comprises from about 90 to about 100 weight percent of piperylene and up to about 10 weight percent of 2-methyl-2-butene at a temperature in the range of about 0°C to about 50°C in the presence of an anhydrous catalyst selected from the group consisting of boron trifluoride and a boron trifluoride etherate derived from boron trifluoride and an ether selected from dimethyl ether, diethyl ether, methyl ethyl ether, di-n-propyl ether, diisopropyl ether, di-n-butyl ether, diisobutyl ether, di-t-butyl ether, di-n-ether, diisoamyl ether, di-t-amyl ether, diisohexyl ether, di-n-hexyl ether, di-t-hexyl ether and butyl (2-ethyl hexyl) ether.

3,853,827

SELF CURING ACRYLATE TYPE COMPOSITION FOR CEMENTING METAL PARTS

Karel Klatil, Decin; Tomas Vogel, Kresin; Milos Moc, and Premysl Jarolimek, both of Usti nad Labem, all of Czechoslovakia, assignors to Spolek Pro Chemickou a Hutni Vyrobu, Usti nad Labem, Czechoslovakia

Filed Jan. 25, 1972, Ser. No. 220,693
Int. Cl. C08f *3/64*, *3/66*, *15/18*
U.S. Cl. 260—86.1 E **10 Claims**

1. A composition for cementing together metal parts which cures in the absence of air but the curing of which is inhibited by the presence of air, the said composition comprising a mixture of (a) between 34.0 and 99.4 percent by weight of at least one acrylic acid or methacrylic acid ester of an alcohol having the formula

$$R\text{-}C(CH_2OH)_3$$

in which formula R is an alkyl radical having up to 4 carbon atoms, a methylol radical, or a radical having the formula

$$-CH_2O-CO-C_nH_{2n+1}$$

n being an integer up to 18, (b) between 0 and 65.4 percent by weight of at least one acrylic acid or methacrylic acid ester of an aliphatic alcohol having between 4 and 10 carbon atoms, or an acrylic acid or methacrylic acid ester of glycol or a polyglycol, (c) between 0.5 and 10 percent by weight of at least one organic hydroperoxide, and (d) between 0.1 and 5% by weight of a tertiary amine or an alkylated amide of formic acid or acetic acid.

3,853,828

PROCESS FOR CROSSLINKING FLUOROCARBON POLYMERS

Leo A. Wall, deceased, late of McLean, Va. (by Leola Grace Wall, administratrix); Daniel W. Brown, Bethesda, and Roland E. Florin, Takoma Park, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 21, 1973, Ser. No. 418,000
Int. Cl. C08f *27/00*
U.S. Cl. 260—87.5 A **13 Claims**

1. A process for crosslinking fluorocarbon polymers without requiring the use of solid or liquid additives selected from the group consisting of

3,3,3-trifluoropropene homopolymers
α,β,β-trifluorostyrene homopolymers
1,2,3,4,5-pentafluorostyrene homopolymers
vinylidene fluoride-hexafluoropropene copolymers
vinylidene fluoride-chlorotrifluoroethylene copolymers
3,3,3-trifluoropropene-tetrafluoroethylene copolymers
5,5,5,4,4,3,3-heptafluoropentene-1-tetrafluoroethylene copolymers

which comprises contacting the polymer with gaseous fluorine diluted with at least about 5 times its volume of an inert gas so that crosslinking of the polymer is accomplished with substantially no introduction of fluorine into the polymer.

3,853,829

COPOLYMERS OF VINYL ETHERS AND CYCLIC POLYENES CONTAINING A SYSTEM OF CONJUGATED DOUBLE BONDS AND PROCESS FOR THE PREPARATION THEREOF

Aldo Priola; Sebastiano Cesca, and Giuseppe Ferraris, all of San Donato Milanese, Italy, assignors to Snam Progetti, S.p.A., San Donato, Milanese, Italy

Filed July 28, 1972, Ser. No. 275,935
Claims priority, application Italy, July 31, 1971, 27015/71
Int. Cl. C08f *15/02*
U.S. Cl. 260—88.1 R 7 Claims

1. A copolymer of vinyl-ethers wherein said vinyl-ethers are alkylvinyl-ethers containing hydrocarbon radicals of from 1 to 20 carbon atoms which are selected from the group consisting of aliphatic and the halogen derivatives thereof and a cyclic polyene selected from the group consisting of cyclopentadiene, methyl-cyclopentadiene, 1-isopropylidentetrahydroindene, dehydro-dicyclopentadiene and 1-isopropyliden-3a, 4, 7, 7a-tetrahydroindene having a vinyl-ethers content higher than 80% and a molecular weight higher than 50,000, said copolymer having been prepared in the presence of a Friedel-Crafts catalyst.

3,853,830

PROCESS FOR PREPARING POLYMERS OF CYCLOPENTENE

Robert J. Minchak, Parma Heights, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Mar. 2, 1973, Ser. No. 337,392
Int. Cl. C08f *7/02*, *15/04*
U.S. Cl. 260—88.2 9 Claims

1. A process for polymerizing cyclopentene with a catalyst comprising (A) at least one organoaluminum compound of the formula AlR_3 wherein R is an alkyl radical containing 1 to 12 carbon atoms, (B) iodine, and (C) at least one tungsten or molybdenum salt or mixture thereof wherein the amount of said salt is from about 0.01 to about 10 millimoles per mole of cyclopentene monomer, the molar ratio of B/A is from about 0.1/1 to about 10/1, and the molar ratio of A/C is from about 0.2/1 to about 20/1.

3,853,831

PERCHLOROFULVALENE HOMOPOLYMER

Raymond R. Hindersinn, Lewiston, N.Y., assignor to Hooker Chemical Corporation, Niagara Falls, N.Y.

Division of Ser. No. 182,177, Sept. 20, 1971, Pat. No. 3,775,516, which is a continuation-in-part of Ser. No. 762,146, Sept. 24, 1968, Pat. No. 3,717,608, which is a continuation-in-part of Ser. No. 597,890, Nov. 30, 1966, abandoned, which is a continuation-in-part of Ser. No. 184,671, April 3, 1962, Pat. No. 3,475,502. This application July 30, 1973, Ser. No. 383,748
Int. Cl. C08f *3/00*
U.S. Cl. 260—91.5 1 Claim

1. A homopolymer prepared by heating perchlorofulualene at temperature in the range of about 100° to 300° centigrade, said homopolymer having a molecular weight of about 2,000 to 10,000 when measured in benzene, wherein said perchlorofulvalene is a chlorocarbon of the empirical formula $C_{10}Cl_8$ characterized by the property of being a crystalline material with a violet reflectance and having an ultraviolet absorption maximum at 389 millimicrons and 603 millimicrons in hexane.

3,853,832

SYNTHETIC HUMAN PITUITARY GROWTH HORMONE AND METHOD OF PRODUCING IT

Choh H. Li, Berkeley, Calif., assignor to Harmone Research Foundation, Berkeley, Calif.

Filed Apr. 27, 1971, Ser. No. 137,811
Int. Cl. C07c *103/52*
U.S. Cl. 260—112.5 20 Claims

1. A method of producing a synthetic human growth - promoting substance which comprises:

a. forming an unbridged polypeptide chain of 188 amino acid residues in the sequence shown in the accompanying drawing;

b. generating sulfhydryl groups on the cysteine residues in said polypeptide chain;

c. oxidizing said sulfhydryl groups under conditions effective to form disulfide bridges between said cysteine residues, thereby forming two intra-molecular rings in the polypeptide chain.

3,853,833

SYNTHETIC HUMAN GROWTH-PROMOTING AND LACTOGENIC HORMONES AND METHOD OF PRODUCING SAME

Choh Hao Li, Berkeley, Calif., assignor to Hormone Research Foundation, Berkeley, Calif.

Continuation-in-part of Ser. No. 137,811, April 27, 1971,. This application July 15, 1971, Ser. No. 162,946
Int. Cl. C07c *103/52*; C07g *7/00*; C08h *1/00*
U.S. Cl. 260—112.5 30 Claims

1. A method of producing synthetic human pituitary growth hormone which comprises:

a. forming an unbridged polypeptide chain of amino acid residues in the sequence of natural human pituitary growth hormone;

b. generating sulfhydryl groups on the cysteine residues in said polypeptide chain;

c. oxidizing said sulfhydryl groups under conditions effective to form disulfide bridges between said cysteine residues, thereby forming two intra-molecular rings in the polypeptide chain.

3,853,834

4-ALANINE LH-RH ANALOG

James E. Shields, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 19, 1972, Ser. No. 298,967
Int. Cl. C07c *103/52*; A61k *27/00*
U.S. Cl. 260—112.5 6 Claims

1. A compound of the formula

$$R_1—L—Ala—L—Tyr(R_2)—Gly(R)$$

in which R is methyl, ethyl, p-nitrobenzyl, or benzyl; R_2 is t-butyl, benzyl, or 2,6-dichlorobenzyl; and, when R_2 is t-butyl, R_1 is H— or CBz—; and, when R_2 is benzyl or 2,6-dichlorobenzyl, R_1 is H—, Cbz—, AdOC—, BOC—, or

AOC—; or an acid addition salt of those compounds in which R_1 is H-.

3,853,835

ALKYL ESTERS OF ASPARTYL ALIPHATIC AMINO ACID DIPEPTIDES

Robert H. Mazur, Deerfield, and James M. Schlatter, Glenview, both of Ill., assignors to G. D. Searle & Co., Chicago, Ill.

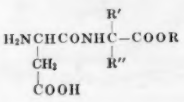
Continuation-in-part of Ser. No. 89,115, Nov. 12, 1970, abandoned. This application Oct. 30, 1972, Ser. No. 302,040

Claims priority, application Australia, Nov. 11, 1971, 35358/71

Int. Cl. C07c *103/52*; A23l *1/26*

U.S. Cl. 260—112.5 12 Claims

1. A compound of the formula



wherein R and R′ are lower alkyl radicals containing less than four carbon atoms and R″ is hydrogen or a lower alkyl radical containing less than four carbon atoms, with the provision that, when R′ and R″ are dissimilar, the carbon atom to which R′ and R″ are attached possesses the (R) stereochemical configuration.

3,853,836

PSYCHOPHARMACOLOGICALLY ACTIVE PEPTIDES RELATED TO ACTH

Hendrik Marie Greven, Heesch, Netherlands, assignor to Akzona Incorporated, Ashville, N.C.

Filed Feb. 12, 1973, Ser. No. 331,945

Claims priority, application Netherlands, Feb. 22, 1972, 7202278

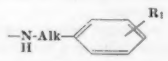
Int. Cl. C07c *103/52*; A61k *27/00*, *17/06*

U.S. Cl. 260—112.5 7 Claims

1. A peptide of the formula:

A—L—Glu—L—His—X,

in which A is a member of the group consisting of H—D—met, H—L—Met (→ O), H—D—Met (→ O), H—L—Met (→ O_2), H—D—Met (→ O_2), desamino—Met, desamino—Met (→ O), desamino—Met (→ O_2), and the moiety $H_2N—B—CO—$, in which B is alkylene having 1–6 carbon atoms, and in which X is selected from the group consisting of hydroxy, (N-phenylalkyl)-amino of the formula



in which R_1 is selected from the group consisting of hydrogen and hydroxy and Alk is alkylene with 1–6 carbon atoms, and the group L—Phe—Y in which Y is selected from the group consisting of hydroxy and (N-aminoalkyl)-amino selected from the group consisting of descarboxy-lysyl and descarboxy-arginyl, the groups L—Lys—Z and L—Arg—Z, in which Z is selected from the group consisting of hydroxy, the group L—Trp—OH, the group L—Trp—Gly—OH, and a (N-3-indolylethyl) amino group, and functional derivatives of said peptide selected from the group consisting of pharmaceutically acceptable acid addition salts, derivatives in which one or more free amino groups are substituted by acyl derived from an aliphatic carboxylic acid with 1–6 carbon atoms, unsubstituted amides or lower alkyl (1–6C) substituted amides of those peptides having a free carboxyl group, esters derived from aliphatic or phenylaliphatic alcohols with 1–18 carbon atoms, and metal complexes thereof.

3,853,837

NOVEL NONAPEPTIDE AMIDE ANALOGS OF LUTEINIZING HORMONE RELEASING FACTOR

Masahiko Fujino, Takarazuka; Shigeru Kobayashi, Osaka; Mikihiko Obayashi, Osaka; Susumu Shinagawa, Osaka, and Tsunehiko Fukuda, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 25, 1973, Ser. No. 354,381

Claims priority, application Japan, Apr. 29, 1972, 47-42686; Nov. 24, 1972, 47-118452

Int. Cl. C07c *103/52*; A61k *27/00*

U.S. Cl. 260—112.5 13 Claims

1. A nonapeptide amide derivative shown by the general formula:

L-pyroglutamyl-L-histidyl-L-tryptophyl-L-seryl-A_1-glycyl-A_2-L-arginyl-L-proyl-Y

wherein A_1 is L-tyrosyl or L-phenylalanyl; A_2 is L-leucyl, L-isoleucyl, L-norleucyl, L-valyl, L-norvalyl, L-methionyl or L-phenylalanyl, Y represents NHR in which R is a straight or branched alkyl group of one to three carbon atoms which may be substituted by hydroxy or alternatively Y represents pyrrolidino,

and pharmaceutically acceptable salt thereof.

3,853,838

SEDATIVE PEPTIDES RELATED TO ACTH CONTAINING A D-PHE MOIETY

Hendrik Marie Greven, Heesch, Netherlands, assignor to Akzona Incorporated, Asheville, N.C.

Filed July 10, 1973, Ser. No. 377,978

Claims priority, application Netherlands, July 15, 1972, 7209839

Int. Cl. C07c *103/52*; A61k *27/00*, *17/06*

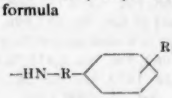
U.S. Cl. 260—112.5 7 Claims

1. A peptide of the formula: A—L—Glu(Q)—L—His—D—X in which L and D indicate the configuration of the relative residue and

A is selected from the group consisting of H—L—Met, H—L—Met(→ O), H—L—Met (→ O_2), desamino-methionyl, desaminodesamino-methionyl(→ O), desamino-methionyl (→ O_2), and the moiety: $H_2N—B—CO—$, in which B is alkylene having 1–6 carbon atoms;

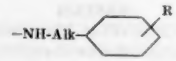
Q is selected from the group consisting of hydroxy and amino;

X is selected from a (N-phenyl branched alkyl) amino group of the formula



in which R is a branched alkylene group with 2-6 carbon atoms and R_1 is selected from the group consisting of hydrogen and hydroxy; and the group —Phe—Y in which Y is selected from the group consisting of hydroxy, descarboxy-lysyl, descarboxy-arginyl, —L—Lys—Z and —L—Arg—Z, in which Z is selected from the group consisting of hydroxy, —L—Phe—OH,

β-indolyl-ethylamino, and a phenylalkylamino moiety of the formula



in which Alk is alkylene with 1–6 carbon atoms and R_1 is selected from the group consisting of hydrogen and hydroxy;

and functional derivatives of said peptide selected from the group consisting of pharmaceutically acceptable acid addition salts, derivatives in which one or more free amino groups are substituted by acyl derived from an aliphatic carboxylic acid with 1.6 carbon atoms, unsubstituted amides or lower alkyl (1–6 C) substituted amides of those peptides having a free carboxyl group, esters derived from aliphatic or araliphatic alcohols with 1–18 carbon atoms, and metal complexes thereof.

3,853,839

METHOD OF FORMING PROTEIN FOOD PRODUCT

Pete J. Magnino, St. Louis; Ralph A. Hoer, Ballwin, and Robert E. Hahn, Edwardsville, all of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Jan. 19, 1972, Ser. No. 219,156

Int. Cl. A23j *1/14, 3/00*

U.S. Cl. 260—123.5 **10 Claims**

1. A process of treating soy protein to form an isolated soy protein material which is useful in the low acid pH range of about 2.0 to 4.2 comprising the steps of: (a) preparing an isolated soy protein material consisting of the steps of extracting protein and sugars from solvent extracted soybean flake material, separating the extracted liquor from the solid soybean flake material, adjusting the pH of the liquor to about the isoelectric point of the protein to precipitate the protein, separating the precipitated protein from the residue to obtain the isolated soy protein material; and (b) thereafter forming an aqueous slurry of the isolated soy protein having a pH of about 2.0 to about 4.2 and a solids content within the range of 10 – 15%; practically instantly heating successive portions of the slurry to a temperature of about 250° – 320° F., on a continuous basis, subsequently retaining the slurry in the heated condition under positive pressure for a period of time at least sufficient to destroy the trypsin inhibitors therein and then suddenly releasing the pressure on successively advanced portions thereof, such sudden pressure release causing flash off volatilization and removal of water vapor therefrom and separating the vapors from the slurry to thereby produce the isolated soy protein product.

3,853,840

REACTIVE DYESTUFFS CONTAINING A FIBER-REACTIVE ALKYLSULPHONYLPYRIMIDYL GROUP

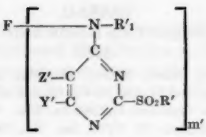
Karl-Heinz Schundehutte, and Kersten Trautner, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 512,542, Dec. 8, 1965, abandoned. This application Mar. 24, 1970, Ser. No. 22,365

Int. Cl. C09b *62/22, 62/24, 62/26*

U.S. Cl. 260—146 D **14 Claims**

1. A reactive dyestuff of the formula



wherein F is the radical of an organic dyestuff in which

is bonded directly to an aromatic nuclear carbon atom of F;

R'_1 is hydrogen or lower alkyl of 1–5 carbon atoms;

R' is lower alkyl of 1–5 carbon atoms;

Z' is chlorine or bromine;

Y' is hydrogen or methyl; and

m' is a number from 1 to 2.

3,853,841

MONOAZO COMPOUNDS

Nalin Binduprasad Desai; Ponnusami Jayaraman, both of Goregaon-Bombay, India; Visvanathan Ramanathan, Basel; Klaus Artz, Muttenz, both of Switzerland; Navnitrai Nagarji Naik, Goregaon-Bombay, India, and Walter Jenny, Basel, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

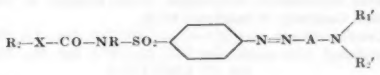
Continuation-in-part of Ser. No. 806,291, March 11, 1969, Pat. No. 3,679,657. This application Dec. 15, 1971, Ser. No. 208,418

Claims priority, application Switzerland, Apr. 18, 1968, 3958/68

Int. Cl. C09b *29/08, 29/26*

U.S. Cl. 260—207.1 **2 Claims**

1. A dyestuff of formula



wherein

R_2 is phenyl, toluene, xylene, chlorophenyl, trifluoromethylphenyl or methoxyphenyl,

X is oxygen or NR_1,

R and R_1 are each hydrogen, phenyl or C_1-C_4-alkyl,

A is 1,4-phenylene or 1,4-phenylene substituted by a member selected from the group consisting of methyl, ethyl, methoxy, ethoxy, phenylthio, phenoxy, chlorine, bromine, trifluoromethyl,

or —NHCO—$(CH_2)_n$—H wherein n is an integer from 1–3, C_1–C_4—alkyl—sulfonyl amino, phenylsulfonyl amino, toluenesulfonyl amino, phenoxycarbonyl amino, C_1–C_4—alkoxycarbonyl amino, C_1–C_4—alkylaminocarbonyl amino or aminocarbonyl amino, R_1' and R_2' are each hydrogen, C_1–C_4—alkyl unsubstituted or substituted by phenyl, cyano, chlorine, C_1–C_4—alkoxy, C_1–C_5—alkylcarbonylamino, C_1–C_5—alkylcarbonyloxy, benzoyloxy, C_1–C_4—alkylcarbamyloxy, phenylcarbamyl, C_1–C_4—alkyloxycarbonyloxy, phenoxycarbonyloxy, and phenoxy.

3,853,842

ESTERS OF ANTIBIOTICS B-5050 AND TETRAHYDRO--5050

Toyokazu Kishi, Nara; Setsuo Harada, Osaka; Masayuki Muroi, Osaka, and Motoo Izawa, Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

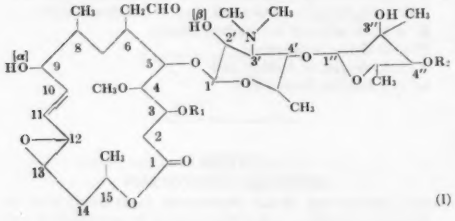
Filed June 30, 1971, Ser. No. 158,556

Claims priority, application Japan, July 2, 1970, 45-58230; Nov. 16, 1970, 45-101329; Dec. 1, 1970, 45-106488

Int. Cl. C07c *129/18*

U.S. Cl. 260—210 AB 17 Claims

1. An ester of a carboxylic acid of 1 to 10 carbon atoms, which is selected from the group consisting of 9-, 2'- and 9, 2'-ester of



(I)

wherein R_1 is propionyl or acetyl and R_2 is i-valeryl, propionyl or acetyl.

3,853,843

DERIVATIVES OF THIOLINCOSAMINIDE COMPOUNDS

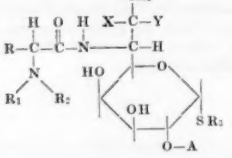
Walter Morozowich, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 314,729, Dec. 13, 1972, abandoned. This application Feb. 22, 1973, Ser. No. 334,723

Int. Cl. C07c *47/18*

U.S. Cl. 260—210 R 20 Claims

1. A compound selected from the group consisting of those of formula:



wherein R, R_1 and R_2 are each selected from hydrogen and alkyl of from 1 to 20 carbon atoms, inclusive, provided that the total number of carbon atoms in R, R_1 and R_2 together does not exceed 20; R_3 is alkyl of 1 to 2 carbon atoms, inclusive; X is selected from hydrogen and hydroxy; Y is hydrogen when X is hydroxy and when X is hydrogen, Y is selected from hydrogen, chlorine, bromine, iodine, alkylthio and monohydroxy-substituted alkylthio, said alkylthio in each of instance having from 1 to 18 carbon atoms, inclusive; A is selected from hydrogen and an acyl radical of a hydrocarbon carboxylic acid containing from 2 to 18 carbon atoms, inclusive; and the acid addition salts thereof.

3,853,844

NUCLEOSIDE 3',5',-CYCLIC PHOSPHOROTHIOATES

Dennis A. Shuman, 26702 Estanciero, Mission Viejo, Calif. 92675, and Roland K. Robins, 10050 Highcliff Rd., Santa Ana, Calif. 92705

Filed Aug. 4, 1972, Ser. No. 277,971

Int. Cl. C07d *51/54*

U.S. Cl. 260—211.5 R 2 Claims

1. 5'-deoxy-5'-thioinosine 3',5'-cyclic phosphorothioate.

3,853,845

5-N-AMINOACYL-5-AMINOURIDINES

Robert J. Rousseau, Laguna Niguel; Roland K. Robins, Santa Ana, and George A. Ivanovics, Costa Mesa, all of Calif., assignors to ICN Pharmaceutical, Inc., Irving, Calif.

Filed Aug. 18, 1971, Ser. No. 172,922

Int. Cl. C07d *51/52*

U.S. Cl. 260—211.5 R 10 Claims

1. 5-N-α-(L-aminoacyl)-5-aminouridine.

3,853,846

INOSINE-5 -CARBOXYLATES

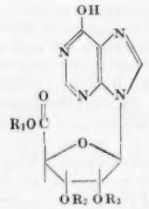
Raj Nandan Prasad, Pierrefonds, Quebec, Canada, and Herman Hal Stein, Skokie, Ill., assignors to Abbott Laboratories, Chicago, Ill.

Filed Feb. 12, 1973, Ser. No. 331,398

Int. Cl. C07d *51/54*

U.S. Cl. 260—211.5 R 6 Claims

1. A compound of the formula



wherein R_1 is loweralkyl, lowerhaloalkyl, or lowerhydroxyalkyl and R_2 and R_3 each are hydrogen or loweralkanoyl, or R_2 and R_3 when taken together form an isopropylidene or benzylidene moiety, and the pharmaceutically acceptable salts thereof.

3,853,847

PURIFICATION OF CYCLOTETRAMETHYLENE TETRANITRAMINE

Paul L. Lee; Sam B. Wright, and Glenn E. Sims, all of Kingsport, Tenn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 2, 1961, Ser. No. 143,273

Int. Cl. C07d *55/16, 55/60*

U.S. Cl. 260—239 HM 7 Claims

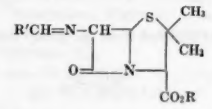
1. A process for the purification of cyclotetramethylene tetranitramine which comprises heating a portion of crude cyclotetramethylene tetranitramine in the presence of linear nitramines in acetic acid, the acid concentration being at least 98 percent, to a temperature of from about 50 to 98°C., maintaining the resulting slurry for a period of about 15–45 minutes at said temperature from about 50 to 98°C., cooling the slurry to a temperature of about 30 to 40°C., adding to said slurry a new increment of said crude cyclotetramethylene tetranitramine, repeating the same cycle for a series of from 5 to 10 increment additions, and recovering a cyclotetramethylene tetranitramine product of high purity.

3,853,848
PENICILLANIC ACID DERIVATIVES

Richard John Stoodley, Newcastle-Upon-Tyne, England, assignor to Beecham Group Limited, Brentford, Middlesex, England

Filed Jan. 17, 1972, Ser. No. 218,529
Claims priority, application Great Britain, Jan. 20, 1971, 2736/71
Int. Cl. C07d 99/16
U.S. Cl. 260—239.1 10 Claims

1. A process for the preparation of the 6-β-epimer of a compound of the formula:



wherein

R is selected from sodium, potassium, benzyl, p-methoxybenzyl, methoxymethyl, phenacyl, trimethylsilyl and tributyltin, and

R′ is selected from alkyl of 1–12 carbon atoms, cyclopropyl, cyclopentyl, cyclohexyl, cycloheptyl, phenyl, naphthyl, furyl, pyridyl, thienyl, indanyl and pyranyl and each of said group substituted by dimethylamino, nitro, hydroxy, chloro, bromo or fluoro,

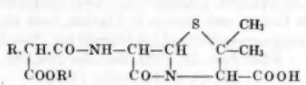
which comprises adding to a solution of a compound of the above formula an epimerizing non-B-lactam rupturing base selected from tertiary amines, alkali carbonates and alkali alkoxides, and separating the 6-β-epimer from the resulting mixture of 6-α- and 6-β-epimers.

3,853,849
ALPHA(ARYLOXYCARBONYL)-AND ALPHA(ALKOXYARBONYL)-ARALKYL PENICILLINS

Kenneth David Hardy, Sussex; John Herbert Charles Nayler, and Edward Raymond Stove, both of Surrey, all of England, assignors to Beecham Group Limited, Brentford Middlesex, England

Continuation of Ser. 833,848, May 29, 1969, abandoned, which is a continuation of Ser. No. 679,995, Nov. 2, 1967,. This application Feb. 8, 1971, Ser. No. 113,740
Int. Cl. C07d 99/16
U.S. Cl. 260—239.1 4 Claims

1. A penicillin monoester of the formula:



(I)

or a non-toxic pharmaceutically acceptable salt thereof, wherein R is phenyl, or 3-thienyl and R^1 is phenyl or methylphenyl.

3,853,850
CRYSTALLINE COMPLEX OF PENICILLIN G 1(S)-OXIDE AND PROCESS FOR PREPARING SAME

Edward McKenzie Wilson, Wayside Birkett Hill, Westmorland, and Alfred Bartley Taylor, The Pantiles, Jordans Way, Jordans, Beaconsfield, both of England

Filed Jan. 16, 1973, Ser. No. 324,169
Claims priority, application Great Britain, Jan. 20, 1972, 2794/72
Int. Cl. C07d 99/16
U.S. Cl. 260—239.1 10 Claims

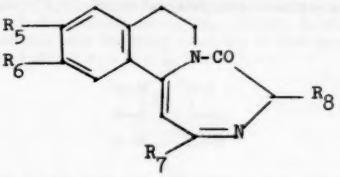
1. The 1:1 molar crystalline complex of penicillin G 1(S)-oxide with acetone.

3,853,851
DIAZEPINOISOQUINOLINES

Heinz Werner Gschwend, New Providence, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 26, 1972, Ser. No. 221,053
Int. Cl. C07d 57/04
U.S. Cl. 260—239.3 T 4 Claims

1. A compound corresponding to the formula



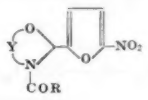
wherein each of R_5 and R_6 is hydrogen, methyl, methoxy, or both R_5 and R_6 are methylenedioxy, R_7 is phenyl, $(methyl)_n$-phenyl, $(methoxy)_n$-phenyl, (methylenedioxy)-phenyl, (fluoro or chloro)$_n$-phenyl, (trifluoromethyl)-phenyl, thienyl or $(methyl)_n$-thienyl, n is an integer from 1 to 3, and R_8 is hydrogen or alkyl with up to four carbon atoms, or pharmaceutically useful acid addition salts thereof.

3,853,852
NEW NITROFURAN DERIVATIVES, THEIR PRODUCTION AND USE

Karl Eiter; Klaus-Friedrich Hebenbrock, both of Koeln, and Manfred Plempel, Wuppertal-Elberfeld, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation-in-part of Ser. No. 162,003, July 12, 1971, abandoned. This application July 24, 1973, Ser. No. 382,212
Claims priority, application Germany, July 18, 1970, 2035797
Int. Cl. C07d 85/44, 87/20
U.S. Cl. 260—239.3 R 21 Claims

1. A compound of the formula:



in which

R is lower alkyl, mono- or dihalo(lower alkyl),

OR^3,

or $COOR^3$ in which:

each of R^1 and R^2, when taken independently of the other is hydrogen, lower alkyl, hydroxy(lower alkyl), phenyl or monohalophenyl, or R^1 and R^2, when taken together with the nitrogen atom to which they are attached, together are phthalimido or azacycloheptan-2-on-1-yl; R^3 is hydrogen, lower alkyl, monohalo(lower alkyl), 1-menthyl or phenyl(lower alkyl); and

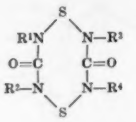
Y is ethylene, 1,2-propylene or 1,3-propylene.

3,853,853
1,5-DITHIA-2,4,6,8-TETRAZACYCLOOCTANE-3,7-DIONES

Philip S. Magee, Ignacio, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 14, 1973, Ser. No. 341,005
Int. Cl. C07d *93/36*
U.S. Cl. 260—239.3 R **2 Claims**

1. A compound of the formula



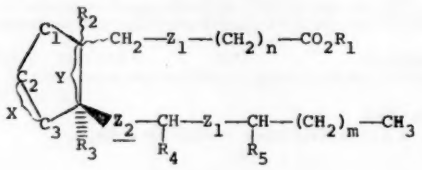
wherein R^1, R^2, R^3 and R^4 individually are hydrogen, lower alkyl of 1 to 6 carbon atoms, cycloalkyl of five to eight carbon atoms, phenyl, naphthyl, alkaryl of seven to 10 carbon atoms or aralkyl of seven to 10 carbon atoms, each of said phenyl, naphthyl, alkaryl or aralkyl groups being unsubstituted or substituted with from 1–4 substituents selected from the group consisting of fluorine, chlorine, bromine, trichloromethyl, trifluoromethyl, alkoxy of one to four carbon atoms or nitro.

3,853,854
NOVEL 5',6'-DIHYDRO-2H-PYRAN-4'-YL PROSTAGLANDIN ETHERS

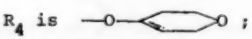
Ned M. Weinshenker, Sunnyvale, Calif., and Niels H. Andersen, Seattle, Wash., assignors to Alza Corporation, Palo Alto, Calif.

Filed June 24, 1971, Ser. No. 156,510
Int. Cl. C07d *7/10*
U.S. Cl. 260—240 R **21 Claims**

1. Novel compounds of the formula:

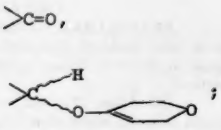


wherein R_1 is selected from the group consisting of hydrogen and lower alkyl; R_2 and R_3 are both hydrogen when Y is a single bond and R_2 and R_3 are both absent when Y is a double bond;

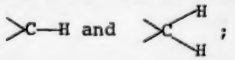


R_3 is a member selected from the group consisting of hydrogen and

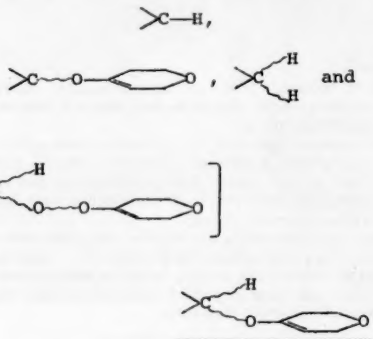
C_1 is a member selected from the group consisting of



C_2 is a member selected from the group consisting of



C_3 is a member selected from the group consisting of



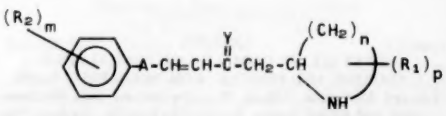
Z_1 is a member selected from the group consisting of cis and trans —CH=CH— and —CH_2CH_2—; Z_2 is a member selected from the group consisting of trans —CH=CH— and —CH_2CH_2—; X is selected from the group consisting of a single bond and double bond and X is a double bond when C_2 and C_3 are substituted with hydrogen; and wherein n is 1 to 5 and m is 0 to 5; the diastereomers and non-toxic salts thereof.

3,853,855
2-AZACYCLOALKYLMETHYL SUBSTITUTED VINYLENE CARBINOLS AND KETONES

J. Martin Grisar, and George P. Claxton, both of Cincinnati, Ohio, assignors to Richardson-Merrell Inc., New York, N.Y.

Filed Apr. 25, 1973, Ser. No. 354,205
Int. Cl. C07b *29/20, 29/16*
U.S. Cl. 260—240 R **5 Claims**

1. A 2-azacycloalkylmethyl substituted vinylene carbinol and ketone having the formula:



wherein m is an integer of from 1 to 3; n is an integer of from 3 to 5; p is an integer of from 1 to 2; R_1 is hydrogen or a lower alkyl having from 1 to 4 carbon atoms; R_2 is selected from the group consisting of hydrogen, lower alkyl having from 1 to 6 carbon atoms, lower alkoxy having from 1 to 6 carbon atoms, lower alkythio having from 1 to 6 carbon atoms, halogen, trifluoromethyl and phenyl; Y is the radical =O or

A is selected from the group consisting of a sigma bond, vinylene and methylvinylene; and the pharmaceutically acceptable acid addition salts thereof.

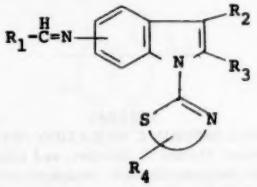
3,853,856

HETEROCYCLIC AZOMETHINES OF N-THIAZOLINYL AND N-THIAZINYL INDOLES

Venkatachala L. Narayanan, Hightstown, and Rudiger D. Haugwitz, Titusville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 30, 1973, Ser. No. 355,853
Int. Cl. C09b *23/00*
U.S. Cl. 260—240.1 **6 Claims**

1. An indole having the formula



wherein the azomethine group is attached to the indole in the 5- or the 6-position; R_1 is a monocyclic heterocycle selected from the group consisting of furan, imidazole, isoxazole, oxazole, pyridine, pyrimidine, pyrrole, thiazole, and thiophene or one of said monocyclic heterocycles substituted with a lower alkyl group; R_2 is selected from the group consisting of hydrogen, lower alkyl, phenyl $-(CH_2)_n$ $COOR_5$, cyano, halo, and di(lower alkyl)amino lower alkyl; R_3 is selected from the group consisting of hydrogen, lower alkyl, phenyl and $-(CH_2)_n$ $COOR_5$; R_4 and R_5 are each selected from the group consisting of hydrogen, lower alkyl, and phenyl; n_1 is 0, 1, 2, 3, 4 or 5;

and

is a 5- or 6-membered ring containing 3 or 4 carbon atoms respectively.

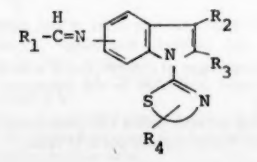
3,853,857

AROMATIC AZOMETHINES OF N-THIAZOLINYL AND N-THIAZINYL INDOLES

Venkatachala L. Narayanan, Highstown, and Rudiger D. Haugwitz, Titusville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 30, 1973, Ser. No. 356,009
Int. Cl. C09b *23/00*
U.S. Cl. 260—240 G **5 Claims**

1. An indole having the formula



wherein the azomethine group is attached to the indole in the 5- or the 6-position; R_1 is phenyl or phenyl substituted in 1, 2, or 3 positions with one or more groups selected from the group consisting of halo, nitro, lower alkyl, lower alkoxy, hydroxy, mono- or di(lower alkyl)amino, amido, acetamido, cyano, carboxy, benzyloxy, and trifluoromethyl; R_2 is selected from the group consisting of hydrogen, lower alkyl, phenyl, $-(CH_2)_n$ $COOR_5$, cyano, halo, and di(lower alkyl)amino lower alkyl; R_3 is selected from the group consisting of hydrogen, lower alkyl, phenyl, and $-(CH_2)_n$ $COOR_5$; R_4 and R_5 are each selected from the group consisting of hydrogen, lower alkyl, and phenyl; n_1 is 0, 1, 2, 3, 4 or 5; and

is

a 5- or 6-membered ring containing 3 or 4 carbon atoms respectively.

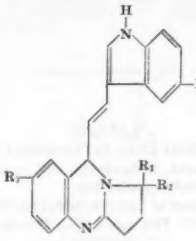
3,853,858

PYRROLOQUINAZOLINE DERIVATIVES

Richard P. Ryan, Jr., Evansville, Ind., assignor to Mead Johnson & Company, Evansville, Ind.

Filed June 21, 1973, Ser. No. 372,131
Int. Cl. C07d *51/48*
U.S. Cl. 260—240 E **9 Claims**

1. A pyrroloquinazoline derivative selected from the group consisting of compounds of the formula



wherein

R_1 and R_2 are independently selected from hydrogen or lower alkyl of 1 to 4 carbon atoms inclusive; and

R_3 and R_4 are independently selected from hydrogen or lower alkoxy of from 1 to 4 carbon atoms inclusive.

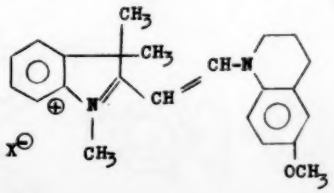
3,853,859

NONFLUORESCENT, GREEN-YELLOW CATIONIC DYE

Frank Ray Hunter, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 792,781, Jan. 21, 1969, abandoned. This application May 14, 1973, Ser. No. 359,682
Int. Cl. C09b *23/00*
U.S. Cl. 260—240.8 **2 Claims**

1. A nonfluorescent green-yellow cationic dye of the formula



where X^- is an anion selected from the group consisting of chloride, bromide, iodide, sulfate, chlorate, phosphate, fluoroborate, picrate, acetate and arylsulfonate.

3,853,860

3-PHOSPHORANYLIDENE ETHYL CEPHALOSPORINS

Niall Galbraith Weir, London, England, assignor to Glaxo Laboratories Limited, Greenford, Middlesex, England

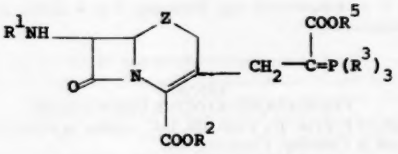
Filed July 30, 1971, Ser. No. 167,870

Claims priority, application Great Britain, Aug. 6, 1970, 38020/70

Int. Cl. C07d *99/24, 99/16*

U.S. Cl. 260—243 C **6 Claims**

1. A compound of the formula



wherein R^1 is thienylacetyl, phenylacetyl, fluorophenylacetyl, nitrophenylacetyl, aminophenylacetyl, acetoxyphenylacetyl, methoxyphenylacetyl, methylphenylacetyl, hydroxyphenylacetyl, or phenoxyacetyl; R^2 is H or t-butyl; R^3 is phenyl; R^5 is lower alkyl or benzyl and Z is >S or >S O; or an acid addition salt thereof.

3,853,861

CEPHALEXIN INTERMEDIATE

William L. Garbrecht, Indianapolis, Md., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 808,313, March 18, 1969, Pat. No. 3,632,850. This application Dec. 8, 1971, Ser. No. 206,152

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **1 Claim**

1. p-Nitrobenzye 7-aminodesacetoxycephalosporinate hydrochloride.

3,853,862

PRODUCTION OF 4-HYDROXY-1,2-BENZOTHIAZINE-3-ARBOXAMIDES

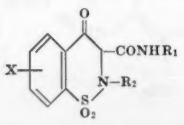
Joseph G. Lombardino, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 23, 1973, Ser. No. 353,607

Int. Cl. C07d *93/02*

U.S. Cl. 260—243 R **8 Claims**

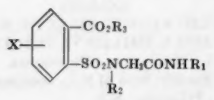
1. A process for the preparation of a compound of the formula:



wherein R_1 is selected from the group consisting of phenyl; monosubstituted phenyl wherein said substituent is selected from the group consisting of fluoro, chloro, methyl and methoxy; 2-thiazolyl; 4,5-dimethyl-2-thiazolyl; 2-pyridyl; 6-methyl-2-pyridyl, and 5-methyl-3-isoxazolyl;

R_2 is alkyl containing from 1 to 3 carbon atoms; and

X is a substituent selected from the group consisting of hydrogen, methyl, methoxy, fluoro, chloro and bromo, which comprises contacting a compound of the formula:



wherein R_3 is alkyl containing from 1 to 3 carbon atoms, with a metal hydride selected from the group consisting of alkali and alkaline earth metal hydrides, in a reaction-inert solvent at 50°–150° C.

3,853,863

CEPHALOSPORIN C ISOLATION PROCESS

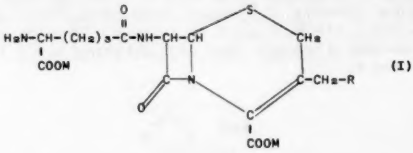
Billy G. Jackson; Martha C. Stamper, and Edmond M. Bottorff, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 306,130, Nov. 13, 1972,. This application Sept. 19, 1973, Ser. No. 398,725

Int. Cl. C07d *99/24*

U.S. Cl. 260—243 C **10 Claims**

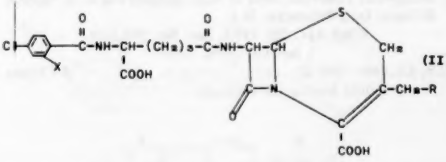
1. An improved process for separating a fermentation-derived cephalosporin C value of the formula



(I)

in which each M is hydrogen or an alkali metal, and R is hydrogen, acetoxy, hydroxy, or methylthio, from polysaccharide and proteinaceous impurities, which comprises

A. reacting the crude cephalosporin C value of formula (I) in an aqueous liquid medium containing a miscible, inert organic solvent and containing said impurities with a 2,4-dichlorobenzoyl halide or a 4-chlorobenzoyl halide to form an N-acyl cephalosporin C value of the formula (II)



(II)

in which X is hydrogen or chlorine and R is as defined above, which compound is soluble in the aqueous-organic liquid medium; and

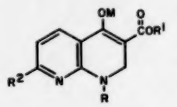
B. separating polysaccharide and proteinaceous impurities from said N-acyl cephalosporin C value.

3,853,864

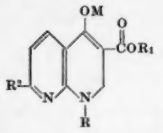
1,7-DIALKYL-1,2-DIHYDRO-4-HYDROXY-1,8-NAPHTHYRIDINE-3-CARBOXYLIC ACID ALKYL ESTERS

Arthur A. Santilli, Havertown, and Anthony C. Scotese, King of Prussia, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Dec. 7, 1972, Ser. No. 313,048
Int. Cl. C07c *31/36*
U.S. Cl. 260—295.5 B 8 Claims



1. A compound of the formula



I

wherein R is a straight-chain lower alkyl group, R^1 and R^2 are each a straight-chain or branched lower alkyl group, and M is hydrogen or an alkali metal, and, when M is hydrogen, the non-toxic, pharmaceutically acceptable acid addition salts thereof.

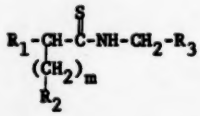
3,853,865

N-AMINOMETHYL-2-AMINO(AND 2-AMINO-METHYL)--HETEROCYCLIC-THIOACETAMIDES

L. Martin Brenner, Upper Darby, and Bernard Loev, Broomall, both of Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

Filed June 26, 1972, Ser. No. 266,024
Int. Cl. C07d *87/46*
U.S. Cl. 260—246 B 4 Claims

1. A compound of the formula:



in which:

m is 0 or 1;

R_1 is 2-pyridyl; and

R_2 and R_3 are di-lower alkylamino, N-lower alkyl-N-phenylamino, piperidino, pyrrolidino or morpholino

or a pharmaceutically acceptable acid addition salt thereof.

3,853,866

3-AMINO-2,4,6-TRIIODOBENZOIC ACID DERIVATIVES

Werner Obendorf; Irmgard Lindner; Josef Krieger, and Ernst Schwarzinger, all of Linz/Donau, Austria, assignors to Osterreichische Stickstoffwerke Aktiengesellschaft, Linz/Donau, Austria

Filed July 9, 1968, Ser. No. 743,299
Claims priority, application Austria, July 13, 1967, 6539/67; July 13, 1967, 6538/67
Int. Cl. C07d *87/42*
U.S. Cl. 260—247.2 A 5 Claims

1. A 3-amino-2,4,6-triiodobenzoic acid derivative, namely, β-[N-(3N′,N′-diethylcarbamyl)-2,4,6-triiodophenyl)-N-methylcarbamyl]-propionic acid.

3,853,867

METHOD OF STABILIZING DICHLOROCYANURIC ACID SALTS

Sidney Berkowitz, Highland Park, and Edwin S. Roth, East Brunswick, both of N.J., assignors to FMC Corporation, New York, N.Y.

Continuation-in-part of Ser. Nos. 239,769, March 30, 1972, abandoned, and Ser. No. 243,420, April 12, 1972, abandoned. This application May 4, 1973, Ser. No. 357,481
Int. Cl. C07d *55/40*
U.S. Cl. 260—248 C 4 Claims

1. A composition of matter containing as its essential components (1) from about 35–65 percent of an alkali metal dichlorocyanurate; (2) from about 30–50 percent of cyanuric acid or the alkali metal salt thereof; and (3) from about 5–15 percent of an inorganic salt the pH of which is at least 9 in aqueous media, the percentages of said components being by weight and together totaling 100.

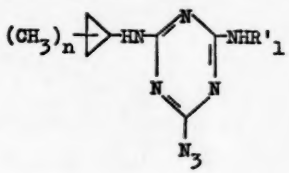
3,853,868

AZIDO-S-TRIAZINES

Alexis Herzog, and Hans Ulrich Brechbuehler, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 12, 1972, Ser. No. 252,729
Claims priority, application Switzerland, June 1, 1971, 7925/71; Apr. 10, 1972, 5214/72
Int. Cl. C07d *55/22*
U.S. Cl. 260—249.6 3 Claims

1. A compound of the formula



wherein R_1' represents hydrogen, C_3–C_4 alkenyl or C_3–C_4 alkynyl and *n* represents 0 or 1

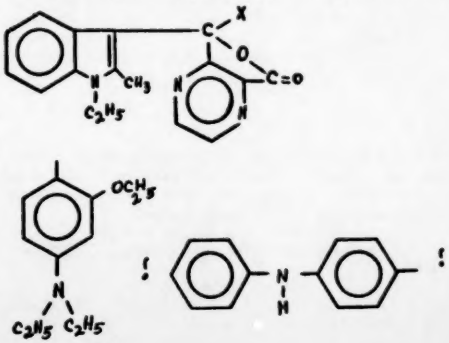
3,853,869

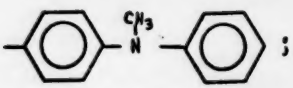
7-(1-ETHYL-2-METHYLINDOL-3-YL) 7-(SUBSTITUTED)-5,7-DIHYDROFURO (3,4-B) PYRAZIN-5-ONE

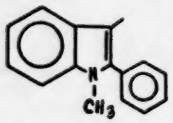
Sheldon Farber, Appleton, Wis., assignor to The National Cash Register Company, Dayton, Ohio

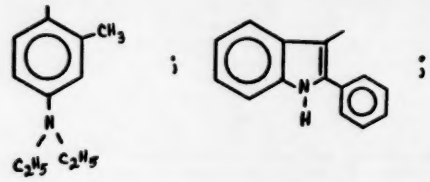
Division of Ser. No. 205,325, Dec. 6, 1971, Pat. No. 3,775,424. This application Apr. 19, 1973, Ser. No. 352,832
Int. Cl. C07d *51/76*
U.S. Cl. 260—250 BC 1 Claim

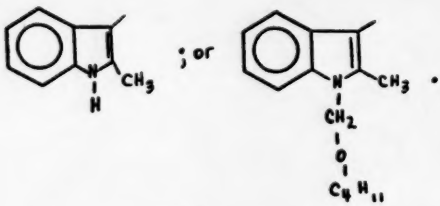
1. A chromogenic compound represented by the formula:











3,853,870

PYRIDAZONYLPHOSPHORIC ACID DERIVATIVES AS HERBICIDES

Jorg Bader, deceased, late of Arlesheim, Switzerland (by Dagmar Bader-Ludwig, legal representative), assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

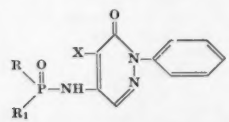
Filed Oct. 10, 1972, Ser. No. 296,428

Claims priority, application Switzerland, Oct. 12, 1971, 14850/71

Int. Cl. C07d *51/04*

U.S. Cl. 260—250 A **5 Claims**

1. A 1-phenyl-pyridazonyl-phosphoric acid derivative of the formula



[(I)]

wherein each of R and R_1 independently represents alkoxy of from 1 to 4 carbon atoms, alkylthio of from 1 to 4 carbon atoms, halogenoalkoxy of from 1 to 4 carbon atoms or alkenyloxy of 3 or 4 carbon atoms, or both together represent an oxyethyleneoxy bridge; and X represents chlorine or bromine.

3,853,871

PROCESS FOR PRODUCING PYRIMIDINE DERIVATIVES

Isao Agata; Shunsaku Noguchi, and Kunihiro Tanaka, all of Osaka, Japan, assignors to Chinoin Pharmaceutical and Chemical Works Ltd., Budapest, Hungary

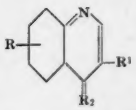
Filed Sept. 7, 1972, Ser. No. 287,026

Claims priority, application Japan, Sept. 10, 1971, 46-70682

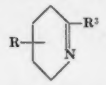
Int. Cl. C07d *51/46*

U.S. Cl. 260—251 A **4 Claims**

1. A process for producing a compound of the formula



wherein R^1 is CN or alkoxycarbonyl, R^2 is NH or oxo, and R is lower alkyl, which comprises reacting a compound of the formula



wherein R^3 is alkoxy and R is as defined above, with a compound of the formula

wherein R^4 is alkoxy, R^5 is CN or alkoxycarbonyl and R^1 is as defined above with the provisos that

A. when R^1 and R^5 are CN, R^2 is NH

B. when R^1 and R^5 are both alkoxycarbonyl groups, R^2 is oxo, and

C. when R^1 and R^5 are different groups from one another, R^1 is CN, R^5 is alkoxycarbonyl and R^2 is oxo,

in the presence of ammonia or an ammonia-producing substance.

3,853,872

2,3,4,5-SUBSTITUTED THIAZOLES

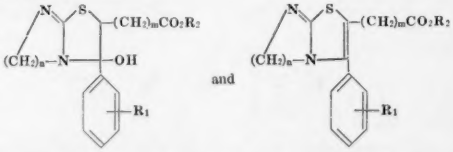
Peter H. L. Wei, Springfield, and Stanley C. Bell, Penn Valley, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 125,412, March 17, 1971, abandoned. This application May 24, 1973, Ser. No. 363,455

Int. Cl. C07d *51/46*

U.S. Cl. 260—251 A **10 Claims**

1. A compound selected from the group consisting of those of the formulae:



wherein R_1 is selected from the group consisting of hydrogen, (lower)alkyl, halogen and trifluoromethyl;

R_2 is selected from the group consisting of hydrogen and (lower)alkyl;

n is an integer of from two to four, inclusive;

m is the integer one or two; and the pharmaceutically acceptable acid salts thereof.

3,853,873

2,4-DIAMINO QUINAZOLINE DERIVATIVES

Edward F. Elslager, and Leslie M. Werbel, both of Ann Arbor, Mich., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

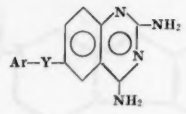
Filed Jan. 17, 1973, Ser. No. 324,276

Claims priority, application Great Britain, Apr. 7, 1972, 16230/72

Int. Cl. C07d *51/48*

U.S. Cl. 260—256.5 R **6 Claims**

1. A compound having the structural formula



wherein Y is S, SO, or SO_2, and Ar is p-chlorophenyl, α,α,α-trifluoro-m-tolyl, or 2-naphthyl.

3,853,874

CERTAIN β-HYDROXY-β-PHENYLETHYL-SUBSTITUTED CYCLIC ACYLUREAS

Juergen Habermeier, Allschwil; Hans Batzer, Arlesheim, and Daniel Porret, Binningen, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

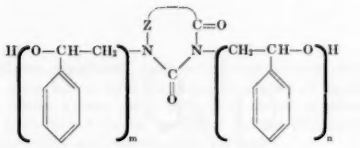
Continuation-in-part of Ser. No. 82,071, Oct. 19, 1970, Pat. No. 3,686,174. This application June 13, 1972, Ser. No. 262,421

Claims priority, application Switzerland, Nov. 27, 1969, 17672/69

Int. Cl. C07d *51/20, 51/30, 49/32*

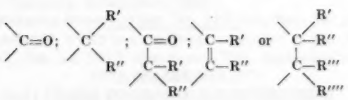
U.S. Cl. 260—257 **8 Claims**

1. A monoalcohol or dialcohol of the formula



(I)

wherein Z represents a member selected from the group consisting of a divalent group of formulae



wherein R′, R″, R‴ and R⁗ each represents a member selected from the group consisting of alkyl with 1 to 4 carbon atoms, alkenyl with 2 to 4 carbon atoms, cyclohexyl, cyclohexenyl and phenyl, or when the residue Z represents the formulae

R′ and R″ together can also form a member selected from the group consisting of divalent tetramethylene and pentamethylene ring, and *m* and *n* each represents an integar having a value of 0 to 3 with the sum of *m* and *n* having to be at least 1.

3,853,875

ESTERS OF 2-ALKYL THIAZOLE 5-CARBOXYLIC ACID

Francois Clemence, Rosny-Sous-Bois, and Odile Le Martret, Paris, both of France, assignors to Roussel-UCLAF, Paris, France

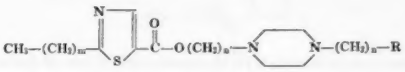
Filed June 14, 1972, Ser. No. 262,785

Claims priority, application France, June 14, 1971, 71.21466

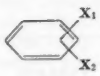
Int. Cl. C07d *91/32*

U.S. Cl. 260—268 PH **15 Claims**

1. A compound of the formula



wherein *n* represents the whole numbers 0, 1, 2, 3, 4, 5, *n′* represents the whole numbers 1, 2, 3, 4, 5, *m* represents the whole numbers 0, 1, 2, 3, 4, 5, and R is a member of the group consisting of a phenyl of the formula



wherein X_1 and X_2, identical or different, represent a member of the group consisting of a hydrogen atom, a chlorine atom, a bromine atom, an iodine atom, an alkyl containing from 1 to 6 carbon atoms, an alkyloxy containing from 1 to 6 carbon atoms, trifluoro methyl and pyridyl; and their non-toxic, pharmaceutically acceptable acid addition salts.

3,853,876

ORTHO-MERCAPTOAROYLAMIDES AND SALTS THEREOF ABSTRACT OF THE DISCLOSURE

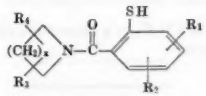
Milton Wolf, West Chester; John H. Sellstedt, Prussia, and Richard L. Fenichel, Wyncote, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Mar. 6, 1972, Ser. No. 232,250

Int. Cl. C07d *27/04, 29/10*

U.S. Cl. 260—268 R **10 Claims**

1. The compounds of the formula



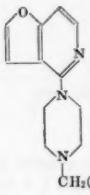
in which R_1 and R_2 are members independently selected from the group consisting of —H, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, —F, —Cl, —Br, —I, dialkylamino in which each alkyl group has from 1 to 6 carbon atoms, —OH, —SH, $—NO_2$ and alkylthio having from 1 to 6 carbon atoms; R_3 and R_4 are members independently selected from the group consisting of —H, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms —F,-Cl ,—Br,—I, and dialkylamino in which each alkyl group is from 1 to 6 carbon atoms; X is the integer 2 or 3 and pharmaceutically acceptable amine, alkali metal, alkaline earth metal and zinc salts thereof.

3,853,877
[4-(W-HYDROXYALKYL)-1-PIPERAZINE]-FURO(3,2-C)PYRIDINES

William R. Simpson, Mendham, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Filed Oct. 10, 1972, Ser. No. 296,442
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 FT 4 Claims

1. A compound of the formula:



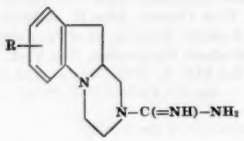
wherein z is 1 to 4, or a pharmaceutically acceptable acid addition salt thereof.

3,853,878
1,2,3,4,10,10A-HEXAHYDROPYRAZINO[1,2:A]INDOLE-2-CARBOXAMIDINES

Rochus Jonas; Richard Unger; Hans-Jochen Schliep, and Ernst Schorscher, all of Darmstadt, Germany, assignors to Merck Patent Gesellscheft mit beschrankter Haftung, Darmstadt, Germany

Filed Dec. 14, 1972, Ser. No. 314,934
Claims priority, application Germany, Dec. 16, 1971, 2162422; Oct. 14, 1972, 2250493
Int. Cl. 260 *250 R;* C07d *51/70*
U.S. Cl. 260—268 TR 7 Claims

1. A 1,2,3,4,10,10a-hexahydropyrazino[1,2:a]indole-2-carboxamidine of the formula



I

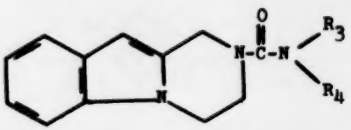
wherein R is H or CH_3O, or a physiologically acceptable acid addition salt thereof.

3,853,879
TETRAHYDROPYR-AZINOINDOLE-2-CARBOXAMIDES

Meier E. Freed, and Elisabeth Hertz Freed, both of 137 Hollow Rd., Paoli, Pa. 19301

Continuation-in-part of Ser. No. 130,523, April 1, 1971, Pat. No. 3,736,324, which is a continuation-in-part of Ser. No. 769,388, Oct. 21, 1968, Pat. No. 3,641,030. This application Feb. 7, 1973, Ser. No. 330,349
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 TR 4 Claims

1. A compound selected from the group consisting of those having the formula:



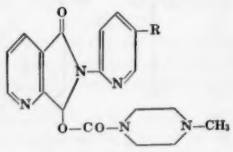
wherein R_3 and R_4 when taken separately are selected from the group consisting of hydrogen, di(lower)alkylamino(lower-)alkyl in which each of the lower alkyl moieties has from one to three carbons; R_3 and R_4 when taken together with the nitrogen atom to which they are attached form phenyl-piperazinyl.

3,853,880
PYRROLO (3,4-B) PYRIDINE DERIVATIVES

Jean-Louis Challier, Thiais; Claude Jeanmart, Brunoy, and Mayer Naoum Messer, Bievres, all of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Oct. 19, 1972, Ser. No. 299,167
Claims priority, application France, Oct. 22, 1971, 71.38045
Int. Cl. C07d *51/70*
U.S. Cl. 260—268 BC 4 Claims

1. A pyrrolo[3,4-b]pyridine of the formula:



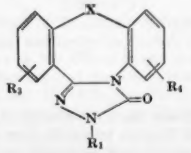
wherein R represents halogen, alkyl of one through four carbon atoms, or cyano, and non-toxic acid addition salts thereof.

3,853,881
DIBENZO [B,F]-S-TRIAZOLO [4,3-D] [1,4] THIAZEPINES-3-ONES AND DIOXO DERIVATIVES THEREOF

Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 307,113, Nov. 16, 1972, abandoned, which is a continuation-in-part of Ser. No. 220,405, Jan. 24, 1972, abandoned. This application Aug. 7, 1973, Ser. No. 386,279
Int. Cl. C07d *99/10*
U.S. Cl. 260—268 PC 14 Claims

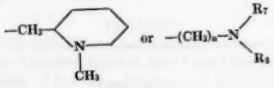
1. A compound of the formula VI



IV

wherein X is sulfur or

wherein R_1 is hydrogen, alkyl of one to three carbon atoms, inclusive,



in which n is 2 or 3, and R_7 and R_8 are hydrogen or alkyl defined as above, or together

is pyrrolidino, piperidino, or N-methylpiperazino; wherein R_3 and R_4 are selected from the group consisting of hydrogen, fluoro, chloro, bromo, alkyl, defined as above, or alkoxy of one to three carbon atoms, inclusive; and the pharmacologically acceptable acid addition salts thereof.

3,853,882
2,9-DIHYDRO-[C,F]-S-TRIAZOLO[4,3-A]AZEPIN-3-ONES

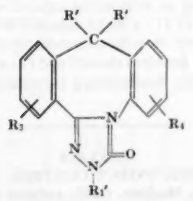
Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 307,113, Nov. 16, 1972, abandoned, which is a continuation-in-part of Ser. No. 220,405, Jan. 24, 1972, abandoned. This application Aug. 7, 1973, Ser. No. 386,277

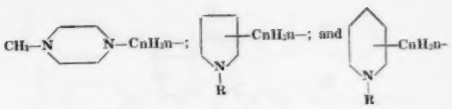
Int. Cl. C07d *57/02, 99/02*

U.S. Cl. 260—268 PC **26 Claims**

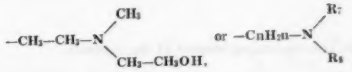
1. A compound selected from the group consisting of 2,9-dihydro[c,f]-s-triazolo[4,3-a]azepin-3-ones of the formula III:



wherein R' is hydrogen or methyl; wherein R_1 is hydrogen, alkyl of one to three carbon atoms, inclusive,



in which n is 2 or 3, inclusive, and R is alkyl defined as above, or R_1 is



in which R_7 and R_8 are hydrogen or alkyl defined as above and n is defined as above, or together

is pyrrolidino or piperidino; and wherein R_3 and R_4 are each selected from the group consisting of hydrogen, fluoro, chloro, bromo, nitro, alkyl defined as above, trifluoromethyl, and alkoxy, of one to three carbon atoms, inclusive, and the pharmacologically acceptable acid addition salts thereof.

3,853,883
PROCESS FOR THE PRODUCTION OF DIHYDROCODEINE

Edward Leon Grew, and Alastair Agnew Robertson, both of Edinburgh, Scotland, assignors to MacFarlan Smith Limited, Edinburgh, Scotland

Filed Feb. 22, 1972, Ser. No. 228,357

Claims priority, application Great Britain, Aug. 27, 1971, 40245/71

Int. Cl. C07d *43/28*

U.S. Cl. 260—285 **8 Claims**

1. In a process for the preparation of 1-dihydrocodeine wherein 1-dihydrocodeinone is catalytically hydrogenated in a liquid medium with a catalyst selected from the group consisting of platinum oxide and supported platinum metal, the improvement which comprises the steps of:

a. catalytically hydrogenating the 1-dihydrocodeinone in the presence of a base selected from the group consisting of alkali metal hydroxide, soluble alkali metal alkoxide and soluble quaternary ammonium hydroxide.

3,853,884
BENZOXANTHENE AND BENZOTHIOXANTHENE DYESTUFFS

Helmut Troster, Frankfurt am Main, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

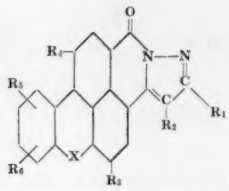
Filed Aug. 2, 1973, Ser. No. 384,785

Claims priority, application Germany, Aug. 4, 1972, 2238330

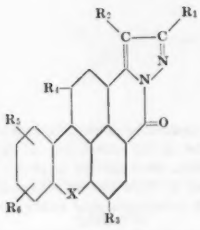
Int. Cl. C07d *35/32*

U.S. Cl. 260—287 R **8 Claims**

1. Benzoxanthene or benzothioxanthene dyestuffs consisting of a mixture of the compound of the formula



and its corresponding isomer of the formula



in which formulas X is oxygen or sulfur, R_1 is hydrogen, alkyl with 1 to 20 carbon atoms, methoxy carbonylmethyl, ethoxycarbonylmethyl, alkoxycarbonyl with 1 to 4 carbon atoms or phenyl, R_2 is alkoxycarbonyl with 1 to 20 carbon atoms, alkanoyl with 1 to 4 carbon atoms, benzoyl, cyano, carbamoyl or phenylcarbamoyl, R_3 and R_4 are simultaneously hydrogen or alkoxy with 1 to 4 carbon atoms, or R_3 is alkoxy with 1 to 4 carbon atoms and R_4 is hydrogen and R_5 and R_6 are hydrogen, chlorine, bromine, alkyl, alkoxy or alkoxycarbonyl each with 1 to 4 carbon atoms.

3,853,885

HEPTACHLORO-5H-1-PYRIDINE AND A METHOD FOR THE PREPARATION THEREOF

Sven H. Ruetman, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 3, 1973, Ser. No. 357,043

Int. Cl. C07d *39/00*

U.S. Cl. 260—290 R **4 Claims**

1. Heptachloro-5H-1-pyridine.

3,853,886

CERTAIN N-SUBSTITUTED SCOPOLAMMONIUM COMPOUNDS

Silvano Casadio, and Arturo Donetti, both of Milan, Italy, assignors to Instituto De Angeli S.p.A, Milan, Italy

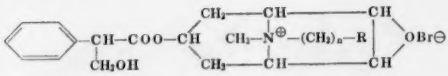
Filed Apr. 13, 1973, Ser. No. 350,927

Claims priority, application Great Britain, Apr. 18, 1972, 17920/72

Int. Cl. C07d *43/06*

U.S. Cl. 260—292 **7 Claims**

1. A scopolamine derivative having the following general formula:



wherein R represents a cycloalkyl group containing up to five carbon atoms, a lower alkyl-substituted cycloalkyl group containing up to six carbon atoms or an epoxyethyl group and *n* is 1 or 2.

3,853,887

CYCLIALKYLATION OF AMINES

Paul A. Pinke, Des Plaines, and Stephen N. Massie, Palatine, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

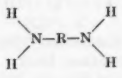
Filed Mar. 9, 1973, Ser. No. 339,818

Int. Cl. C07d *29/28*

U.S. Cl. 260—293.64 **9 Claims**

1. A process for the preparation of an N-substituted pyrrolidine or piperidine which comprises reacting a primary amine of one of the structures:

where R_1, is selected from the group consisting of C_1 to C_9 alkyl, pheyl, loweralkylphenyl and loweralkoxyphenyl; or,



where R is selected from the group C_2—C_6 alkylene, phenylene, loweralkylphenylene, 4, 4′-diphenyl methyl diradical and 4,4′-dicyclohexyl methyl diradical, with tetrahydrofuran, tetrahydropyran, lower alkyl-substituted tetrahydrofuran or lower alkyl-substituted tetrahydropyran at a temperature in the range of from about 125°C. to about 250°C. and a superatmospheric pressure sufficient to maintain a major portion of the reactants in the liquid phase, said reaction being effected in the presence of an acid-acting catalyst selected from the group consisting of (1) a metal selected from Group VIII of the Periodic Table on a heterogenous inorganic support of alumina, silica or mixtures thereof and (2) a hydrogen halide, and recovering said N-substituted pyrrolidine or piperidine.

3,853,888

PIPERIDINE INSECT CONTROL AGENTS

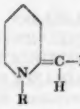
Steven A. Roman, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 250,305, May 4, 1972, abandoned. This application Feb. 9, 1973, Ser. No. 331,155

Int. Cl. C07d *29/26*

U.S. Cl. 260—293.51 **2 Claims**

1. A compound of the formula



wherein R is straight-chain alkyl of 2 to 5 carbon atoms or is allyl.

3,853,889

3,14-SUBSTITUTED-8-OXAMORPHINANS

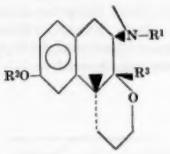
Ivo Monkovic, Candiac, Quebec, and Yvon Lambert, Brossard, Quebec, both of Canada, assignors to Bristol-Myers Company, New York, N.Y.

Filed July 18, 1973, Ser. No. 380,515

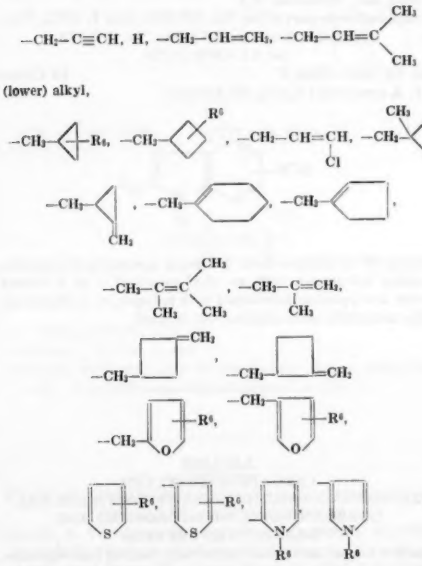
Int. Cl. C07d *99/04*

U.S. Cl. 260—293.55 **30 Claims**

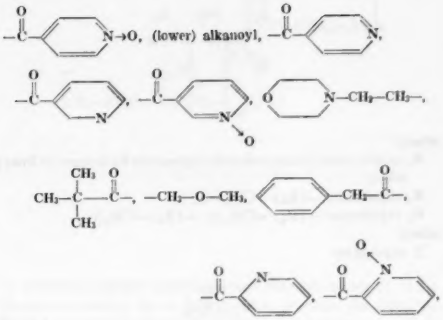
1. A compound having the formula



wherein R^1 is selected from the group comprising



and (lower)alkenyl in which R^6 is H or CH_3, R^2 is selected from the group comprising H, (lower)alkyl,



and cinnamoyl, and R^3 is H or (lower)alkyl; or a pharmaceutically acceptable acid addition salt thereof.

3,853,890

AZINE DERIVATIVES OF PIPERIDINE

Brian Holt, Royton, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

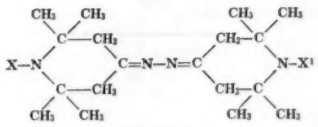
Filed Sept. 17, 1971, Ser. No. 181,568

Claims priority, application Great Britain, Sept. 19, 1970, 44759/70

Int. Cl. C07d *29/26*

U.S. Cl. 260—293.63 **4 Claims**

1. A compound of the formula



wherein X and X^1 are the same or different and represent NO, formyl, acetyl or propionyl.

3,853,891

N-(N-(CYANOALKYL)-N-NITROSO)AMINO-AMINOALCOHOL

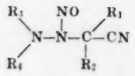
William R. Simpson, Mendham, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Division of Ser. No. 153,883, June 16, 1971, Pat. No. 3,766,185, which is a continuation-in-part of Ser. No. 131,431, April 5, 1971, abandoned, which is a continuation-in-part of Ser. Nos. 51,338, June 30, 1970, abandoned, and Ser. No. 67,994, Aug. 28, 1970, abandoned. This application June 20, 1973, Ser. No. 371,932

Int. Cl. C07d *29/32*

U.S. Cl. 260—293.87 **5 Claims**

1. A compound of the formula



where

R_1 and R_2 each independently represents hydrogen or lower alkyl;

R_3 represents $-(R_5)-CH_2-X$;

R_4 represents $-(R_6)-CH_3$ or $-(R_6)-CH_2X$;

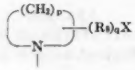
where

X represents

or $-ONO_2$;

R_5 and R_6 each independently represents straight or branched chain alkylene having 1 to 7 carbon atoms and R_7 represents lower alkyl or lower alkyl substituted with 1 to 3 halo atoms having an atomic weight between about 19 to 36, or

R_3 and R_4 together with N represent



where

p is 4,5 or 6;

q is 0 or 1,

R_8 is lower alkylene, and X is as defined above, provided that $-(R_8)_q-X$ is not attached to a carbon adjacent to the nitrogen atom when q is 0.

3,853,892

4-[PARA-(1-HYDROXYETHYL)-PHENYL]PIPERIDINES

Alberto Rossi, Oberwil/Bl, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

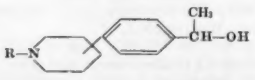
Continuation-in-part of Ser. No. 41,107, May 27, 1970, Pat. No. 3,801,581. This application Mar. 7, 1973, Ser. No. 338,698

Claims priority, application Switzerland, June 5, 1969, 8650/69; Dec. 11, 1969, 18441/69; Apr. 24, 1970, 6221/70

Int. Cl. C07d *29/30*

U.S. Cl. 260—293.76 **7 Claims**

1. A compound of the formula



wherein R represents a hydrogen atom or a methyl or acetyl group, and wherein the piperidine ring may optionally contain one oxo group directly attached to the 2-position of the ring, or a therapeutically useful acid addition salt thereof.

3,853,893

ANTHELMINTIC 5-(PYRIDYL)-3-(ISOTHIOCYANOPHENYL) OXADIAZOLES

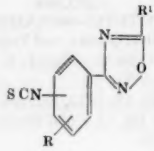
Venkatachala Lakshmi Narayanan, Hightstown, and Rudiger Dieter Haugwitz, Titusville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 2, 1973, Ser. No. 347,312

Int. Cl. C07d *31/48*

U.S. Cl. 260—294.8 E **7 Claims**

1. A compound of the formula:



wherein R is selected from the group consisting of hydrogen, lower alkyl, lower alkoxy, phenyl, trifluoromethyl, di(lower alkyl)amino, and lower acetamido; R^1 is pyridyl; and pharmaceutically acceptable salts thereof.

3,853,894

ISOTHIOCYANOBENZIMIDAZOLES

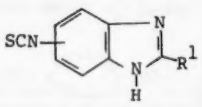
Rudiger D. Haugwitz, Titusville, and Venkatachala L. Narayanan, Hightstown, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 259,058, June 2, 1972,. This application June 22, 1973, Ser. No. 372,870

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 C **10 Claims**

1. A compound having the formula



wherein R^1 is selected from the group consisting of pyridine, pyridine substituted with an alkyl group of 1 to 4 carbon atoms, and pyridine substituted with halogen, or a physiologically acceptable acid-addition salt thereof.

3,853,895

CERTAIN SUBSTITUTED 2,6-DIAMINO-4-METHYL-NICOTINONITRILES THE CORRESPONDING NICOTINAMIDES AND DERIVATIVES THEREOF

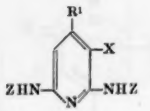
Gunther Lamm, and Johannes Dehnert, both of Ludwigshafen, Germany, assignors to Badische Anilin & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Filed Jan. 31, 1973, Ser. No. 328,459

Int. Cl. C07d *31/46*

U.S. Cl. 260—294.9 **6 Claims**

1. A compound of the formula

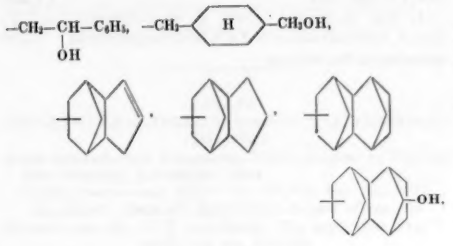


in which:

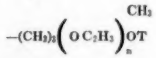
R^1 is hydrogen, alkyl of one to seven carbon atoms or phenyl;

X is cyano or carbamoyl; and

each Z, independently of one another, is hydrogen, alkyl of one to eight carbon atoms, hydroxyalkyl of two to eight carbon atoms, cyanoalkyl of two to seven carbon atoms, alkoxyalkyl of two or three carbon atoms in the alkyl and one to eight carbon atoms in the alkoxy, cyclohexoxypropyl, benzyloxypropyl, β-phenyl-ethoxypropyl, phenoxypropyl, tolyloxypropyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl, hydroxycyclohexyl, β-hydroxyethoxycyclohexyl, norbornyl, hydroxynorbornyl, hydroxymethylnorbornyl, chloromethylnorbornyl, β-hydroxyethylnorbornyl, bicyclooctyl, phenylalkyl or tolylalkyl of one to four carbon atoms in the alkyl, phenyl, phenyl substituted by methyl, methoxy, ethoxy, hydroxy, chloro or β-hydroxyethoxy, allyl, carboxyethyl, carboxypentyl, ω-pyrrolidonylalkyl of two to six carbon atoms in the alkyl,



$-(CH_2)_2O(CH_2)_2OH$, $-(CH_2)_3O(CH_2)_4OH$, $-(CH_2)_3O(CH_2)_6OH$,



or $-(CH_2)_3(OC_2H_4)_nOT$,

n being 1, 2, 3 or 4, and

T being hydrogen, alkyl of one to four carbon atoms, benzyl, phenylethyl, cyclohexyl, phenyl or tolyl.

3,853,896

CERTAIN DILIOWERALKYLAMINO-METHYLENE(OR ETHYLENE)-2(1H)PYRIDONES

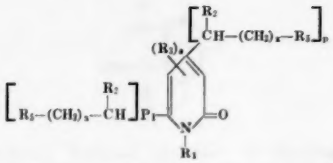
Arsenio A. Pessolano, Colonia; Bruce E. Witzel, Westfield; Patricia M. Graham, Mountainside; Robert L. Clark, Woodbridge, and Tsung-Ying Shen, Westfield, all of N.J., assignors to Merck & Co., Rahway, N.J.

Filed June 25, 1971, Ser. No. 156,919

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 R **9 Claims**

1. A compound of the formula:



or pharmaceutically acceptable salt thereof, where R_1 is hydrogen or methyl, R_2 is dialkylamino, wherein the alkyl has from 1 to 4 carbon atoms, R_3 is alkyl, of 1–4 carbon atoms, R_5 is hydogen; s is 0 or 1; p and p_1 are integers equal to 0 or 1 with at least one p equal to 1; and x is an integer ranging from 0–2.

3,853,897

CERTAIN 1-SUBSTITUTED-3-AMINO-1(2H)PYRIDONES

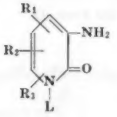
Bruce E. Witzel; Tsung-Ying Shen, both of Westfield; Patricia M. Graham, Mountainside; Robert L. Clark, Woodbridge, and Arsenio A. Pessolano, Colonia, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 163,495, July 16, 1971, abandoned, which is a division of Ser. No. 876,059, Nov. 12, 1969, Pat. No. 3,654,291. This application Jan. 4, 1973, Ser. No. 321,070

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 R **2 Claims**

1. A compound of the formula:



in which L is loweralkylaminolower alkyl or diloweralkylaminolower alkyl; R_1, R_2 and R_3 are each hydrogen, loweralkyl, halooloweralkyl or cycloloweralkyl of from 3–6 carbon atoms with the proviso that at least two of said R_1–R_3 are other than hydrogen.

3,853,898

3-(2-SUBSTITUTED AMINO) PYRIDYL-PHENYL KETONE IMINES

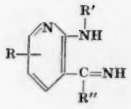
Goetz E. Hardtmann, Florham Park, N.J., and Hans Ott, Basel-Land, Switzerland, assignors to Sandoz-Wander, Inc., Hanover, N.J.

Division of Ser. No. 164,453, July 20, 1971, Pat. No. 3,758,475, which is a continuation-in-part of Ser. No. 870,445, Oct. 20, 1969, abandoned, which is a continuation-in-part of Ser. No. 782,743, Dec. 10, 1968, abandoned. This application May 7, 1973, Ser. No. 358,063

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 R **5 Claims**

1. A compound of the formula:

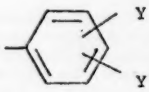


wherein

R is hydrogen or alkyl of 1 to 5 carbon atoms,

R′ is alkyl of 1 to 6 carbon atoms, allyl, methallyl, propargyl or cycloalkyl of 3 to 6 carbon atoms, and

R″ is phenyl or substituted phenyl of the formula:



Y is halo of atomic weight of from 19 to 80, alkyl of 1 to 4 carbon atoms, or alkoxy of 1 to 4 carbon atoms, and

Y′ is hydrogen, halo of atomic weight of from 19 to 80, alkyl of 1 to 4 carbon atoms or alkoxy of 1 to 4 carbon atoms.

3,853,899

7-ALKYL-2,2-DIMETHYL-4-(1-ARALKYL-1,2,3,4-TETRAHYDRO-4-PYRIDYL)-CHROMAN-5-OLS AND DERIVATIVES THEREOF

Charles Sylvester Fake, Harlow, England, assignor to Beecham Group Limited, Middlesex, England

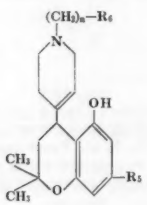
Filed Jan. 16, 1973, Ser. No. 324,222

Claims priority, application Great Britain, Jan. 26, 1972, 3654/72

Int. Cl. C07d *31/28*

U.S. Cl. 260—297 B **8 Claims**

1. A compound of the formula:



wherein R_5 is alkyl of 5 to 8 carbon atoms which is straight chained or branched at the α-carbon atom, *n* is 1 or 2 and R_6 is phenyl or naphthyl, or a pharmaceutically acceptable salt thereof.

3,853,900

4-BENZYLOXY-2 (1H)-PYRIDONES

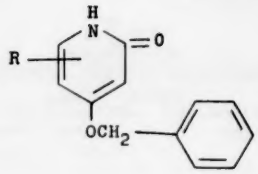
Robert L. Shone, Palatine, Ill., assignor to G. D. Searle and Co., Chicago, Ill.

Filed Sept. 14, 1973, Ser. No. 397,233

Int. Cl. C07d *31/30*

U.S. Cl. 260—297 Z **4 Claims**

1. A compound of the formula



wherein R represents hydrogen or methyl ortho to the benzyloxy.

3,853,901

BIS-P-DITHIINO(2,3-E: 2′,3′-G) (2,1,3)BENZOTHIADIAZOLE-5,6,9,10-TETRACARBONITRILE

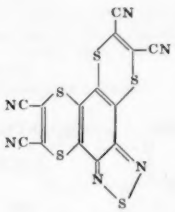
Norman H. Kurihara, Walnut Creek, and Donald E. Bublitz, Concord, both of Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 104,799, Jan. 7, 1971, Pat. No. 3,761,475. This application Feb. 20, 1973, Ser. No. 333,942

Int. Cl. C07d *99/10*

U.S. Cl. 260—304 **1 Claim**

1. The compound which is bis-p-dithiino(2,3-e:2′,3′-g)(2,1,3)benzothiadiazole-5,6,9,10-tetracarbonitrile corresponding to the formula



3,853,902

HALOALKYL-4-THIAZOLIDINONE

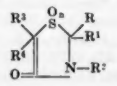
Maynard S. Raasch, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 30, 1971, Ser. No. 214,378

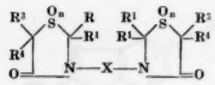
Int. Cl. C07d *91/16*

U.S. Cl. 260—306.7 R **8 Claims**

1. A compound having the formula



or



wherein *n* is 0, 1 or 2.

R and R^1 are $-CF_2H$, $-CF_2Cl$, $-CF_3$ or C_2F_5

R^3 and R^4 are hydrogen, aryl, aralkyl, alkenyl, cycloalkyl, alkyl or carboxyalkyl each of up to 8 carbon atoms.

R^2 is hydrogen, alkyl, alkenyl, aryl, aralkyl, hydroxyalkyl, carbalkoxyalky, or haloalkyl each of up to 8 carbon atoms and X is a polymethylene radical of up to 8 carbon atoms, or $-CH_2COCH_2-$.

3,853,903

SUBSTITUTED 2 -BENZOYLISOXAZOLIDINES

Amedeo Omodei Sale, Voghera, Italy, assignor to Gruppo Lepetit S.p.A., Milan, Italy

Filed June 29, 1973, Ser. No. 374,854

Claims priority, application Italy, Aug. 17, 1972, 28245/72

Int. Cl. C07d *85/08*

U.S. Cl. 260—307 F **4 Claims**

1. A 2-benzoyl-isoxazolidine which is 2-(4-acetoxy-3,5-dimethoxybenzoyl)-5-carbomethoxy-5-methyl-isoxazolidine, 5-phenyl-2-(3,4,5-trimethoxybenzoyl)-isoxazolidine, or 3-phenyl-2-(3,4,5-trimethoxybenzoyl)-isoxazolidine.

3,853,904

DIBENZA-[B,F]-S-TRIAZOLO-[4,3-D][1,4]OXAZEPIN-3-(2H)-ONES

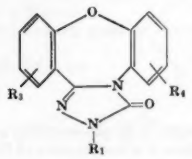
Jacob Szmuszkovicz, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 307,113, Nov. 16, 1972, abandoned, which is a continuation-in-part of Ser. No. 220,405, Jan. 24, 1972, abandoned. This application Aug. 7, 1973, Ser. No. 386,278

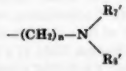
Int. Cl. C07d *99/02*

U.S. Cl. 260—308 C **13 Claims**

1. A compound of the formula:



wherein R_1 is hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, or



in which *n* is 2 or 3, and R_7 and R_8 is hydrogen or alkyl defined as above, or together

is pyrrolidino, N-methyl piperazino, or piperidino; and wherein R_3 and R_4 are hydrogen, fluorine, chlorine, bromine, nitro, alkyl as defined above, trifluoromethyl, or alkoxy of 1 to 3 carbon atoms, inclusive and the pharmacologically acceptable acid addition salts thereof.

3,853,905

CERTAIN 5-(PHENOXYPHENALKYL) TETRAZOLES

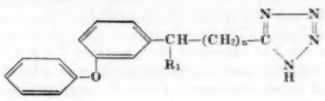
Winston S. Marshall, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 122,999, March 10, 1971, , which is a continuation-in-part of Ser. No. 828,756, May 28, 1969, Pat. No. 3,600,437, which is a continuation-in-part of Ser. Nos. 823,477, May 9, 1969, abandoned, and Ser. No. 752,801, Aug. 15, 1968, abandoned. This application July 17, 1973, Ser. No. 380,037

Int. Cl. C07d *55/56*

U.S. Cl. 260—308 D **1 Claim**

1. A compound of the formula



wherein R_1 is hydrogen, C_1 to C_3-alkyl, C_2 to C_3-alkenyl, C_2–C_3-alkynyl; and

n is an integer of from 0 to 3;

and the pharmaceutically acceptable acid addition salts thereof.

3,853,906

CHROMATOGRAPHIC METHOD FOR THE SEPARATION OF THE OPTICAL ISOMERS

Sergei Vasilievich Rogozhin, ulitsa Vavilova, 55/5, kv. 52, and Vadim Alexandrovich Davankov, Leningardskoe shosse, 112/1, korpus 3, kv. 703, both of, Moscow, U.S.S.R.

Filed June 24, 1969, Ser. No. 836,165

Int. Cl. C07b *19/00*

U.S. Cl. 260—309 **3 Claims**

1. A method for the chromatographic separation of the optical isomers of compounds capable of forming complexes with transition metal ions which comprises treating an asymmetric ion-exchange resin capable of forming complexes with transition metal ions with a solution of a salt of a transition metal selected from the group consisting of copper, zinc, nickel, cobalt, cadmium, chromium, manganese, iron, lead, and silver, and passing through the treated sorbent bed a solution of the mixture of said isomers.

3,853,907
ANTIBACTERIAL BIS(IMIDAZOLIUM QUATERNARY SALTS)

Philip Neil Edwards, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

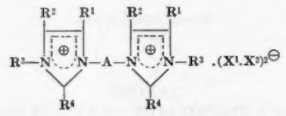
Filed Sept. 28, 1972, Ser. No. 293,058

Claims priority, application Great Britain, Oct. 14, 1971, 47796/71

Int. Cl. C07d *49/36, 49/38*

U.S. Cl. 260—309 **7 Claims**

1. An imidazole derivative selected from the group consisting of compounds of the formula:

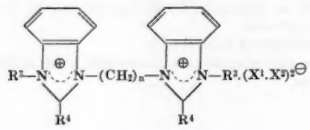


I

wherein R^1 and R^2 are hydrogen; R^3 is alkyl of 6 to 14 carbons, benzyl bearing 0 to 5 chlorines in the benzene ring thereof or 3-alkoxy-2-hydroxypropyl wherein the alkoxy part is of 4 to 8 carbons; R^4 is hydrogen or alkyl of 1 to 3 carbons; $(X^1.X^2)^2$ represents two chloride, bromide, methanesulphonate, toluene-*p*-sulphonate or benzoate anions or a sulphate or hydrogen phosphate anion; and A is a linking group selected from

1. $-(CH_2)_n-$
2. $-CH_2.CH(OH).CH_2-$
3. $-(CH_2)_2.(OCH_2CH_2)p.O(CH_2)_2-$
4. $-(CH_2)_m.CO.NH(CH_2)_nNH.CO(CH_2)_m-$
5. $-CH_2CO.NH(CH_2)_3O(CH_2)_3NH.COCH_2-$
6. $-(CH_2)_r.Z.(CH_2)_r-$

wherein *n* is 2 to 12, *m* is 1 or 2, *p* is 0 to 2, *r* is 1 to 4 and Z is unsubstituted phenylene, naphthylene or phenylenedioxy, or one of these substituted by chlorine, methoxy or methyl or alkylenedioxy of 2 to 12 carbons; and compounds of the formula:



wherein R^3 is alkyl of 6 to 14 carbons; R^4 is hydrogen or alkyl of 1 to 3 carbons; $(X^1.X^2)^2$ represents two chloride, bromide, methanesulphonate, toluene-*p*-sulphonate or benzoate anions or a sulphate or hydrogen phosphate anion; and *n* is 2 to 12.

3,853,908
1-AMINO-SULFONYL-2-AMINOBENZIMIDAZOLES

Arno Widdig, Blecher; Engelbert Kuhle, Bergisch-Gladbach; Ferdinand Grewe, Burscheid, and Helmut Kaspers, Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

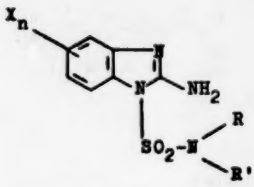
Filed Feb. 2, 1973, Ser. No. 328,998

Claims priority, application Germany, Feb. 9, 1972, 2206010

Int. Cl. C07d *49/38*

U.S. Cl. 260—309.2 **7 Claims**

1. A 1-aminosulfonyl-2-aminobenzimidazole of the formula



(I)

in which

X is halogen, lower alkyl or lower alkoxy,

n is 0, 1 or 2,

R and R′ each independently is alkyl of 1 to 6 carbon atoms optionally substituted by one of halogen or lower alkoxy, or

R and R′, together with the connecting nitrogen atom, is pyrrolidino or piperidino.

3,853,909
PROCESS FOR PREPARING CYCLICDICARBOXIMIDO-SUBSTITUTED PHOSPHONOTHIOATES

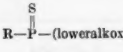
Herman O. Senkbeil, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 9, 1973, Ser. No. 349,154

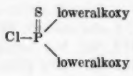
Int. Cl. C07f *9/24*

U.S. Cl. 260—326 E **6 Claims**

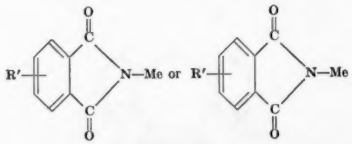
1. A process for preparing cyclicdicarboximido phosphonothioates corresponding to the formula



wherein R represents phthalimido, mono-methyl phthalimido, 4-cyclohexene-1,2-dicarboximido or mono-methyl-4-cyclohexene-1,2-carboximido which comprises reacting a phosphorochloridothioate corresponding to the formula



with an N-alkali-metal cyclicdicarboximide corresponding to the formula



wherein R′ represents hydrogen or methyl and Me represents sodium or potassium at a temperature of from about 0°C. to about 100°C. in the presence of a catalytic amount of 1,4-diazabicyclo(2,2,2)octane and an inert tertiary alcohol.

3,853,910
PRODUCTION OF SUBSTITUTED ETHERS OF -2-PYRROLIDINONES

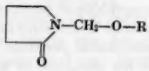
Harlan B. Freyermuth, and David I. Randall, both of Easton, Pa., assignors to GAF Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 23,448, March 27, 1970, abandoned. This application Nov. 1, 1972, Ser. No. 302,801

Int. Cl. C07d *27/04*

U.S. Cl. 260—326.5 FL **10 Claims**

1. An improved process for the preparation of a compound of the formula:



wherein R is selected from the group consisting of methyl, ethyl, n-propyl, isopropyl, n-butyl, isobutyl, n-pentyl, n-hexyl, monyl, decyl, undecyl, dodecyl, tridecyl, octadecyl, hydroxymethyl, 2-hydroxyethyl, 3-hydroxypropyl, chloromethyl, chloroethyl, ethenyl, propenyl, propargyl, butynyl, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, cycloheptyl, cyclooctyl, phenyl, o-, m-, and p-xylyl, tolyl, 1-naphthyl, 2-naphthyl, benzyl and phenethyl, which comprises reacting N-hydroxymethyl-2-pyrrolidinone with an alcohol of the formula:

R—OH

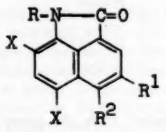
wherein R is as described above, at a temperature of from about 20°C to about 40°C in the presence of an acid catalyst of the group hydrochloric acid, sulfuric acid, nitric acid, phosphoric acid, phosphonic acid, acetic acid, paratoluenesulfonic acid, benzenesulfonic acid, methane-sulfone acid and trichloroacetic acid, the molar ratio of said acid catalyst to said N-hydroxymethyl-2-pyrrolidinone being in the range of from about 0.1 to about 0.5.

3,853,911
ARYLMERCAPTONAPHTHOLACTAMS

Ernst Schefczik, 7 Dubliner Strasse, 6700 Ludwigshafen, Germany

Filed July 11, 1973, Ser. No. 378,222
Int. Cl. C07d *27/00*
U.S. Cl. 260—326.5 S **2 Claims**

1. An arylmercaptonaphtholactam of the formula (I):



(I)

in which

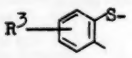
R is hydrogen or unsubstituted or substituted alkyl, cycloalkyl, aralkyl or aryl;

R^1 is hydrogen, methoxy or ethoxy;

R^2 is hydrogen or methoxy;

one X is S—Ar; and the other X is hydrogen, chloro or S—Ar;

X and R^2 together may be



Ar is unsubstituted or substituted phenyl or naphthyl; and

R^3 is hydrogen, alkyl or alkoxy.

3,853,912
N-(ALKYLTHIOPHENYL) MALEIMIDES

Donald E. Bublitz, Concord, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 17, 1972, Ser. No. 307,608
Int. Cl. C07d *27/18*
U.S. Cl. 260—326.5 S **2 Claims**

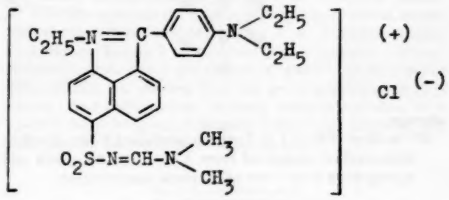
1. The compound which is N-(2'--methylthiophenyl)maleimide.

3,853,913
BENZ-[C,D]-INDOLIUM DYESTUFFS

Alfred Brack, and Hubertus Psaar, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed June 8, 1972, Ser. No. 260,914
Claims priority, application Germany, June 8, 1971, 2128326
Int. Cl. C07d *27/44*
U.S. Cl. 260—326.9 **2 Claims**

1. A dyestuff of the formula

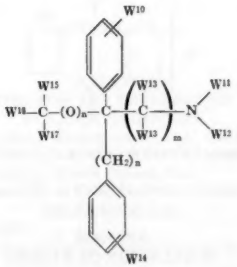


3,853,914
LIGAND DETERMINATION OF SPIN LABELED COMPOUNDS BY RECEPTOR DISPLACEMENT

Avram Goldstein, Stanford; Richard K. Leute, Sunnyvale, and Edwin F. Ullman, Atherton, all of Calif., assignors to Syva Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 105,535, Jan. 11, 1971, abandoned, and a continuation-in-part of Ser. No. 141,516, May 10, 1971, Pat. No. 3,690,834. This application July 10, 1972, Ser. No. 270,108
Int. Cl. C07d *27/04*
U.S. Cl. 260—326.47 **3 Claims**

1. A spin labeled reagent, which is a methadone or methadone analog according to the formula:



wherein:

n is 0 or 1;

m is 2 or 3;

W^{10} is hydrogen;

W^{11} and W^{12} are hydrogen, alkyl of from 1 to 3 carbon atoms, or may be taken together to form a six-membered ring with the nitrogen atom to which they are attached;

W^{13} is hydrogen or methyl, only one W^{13} being methyl;

W^{14} is hydrogen;

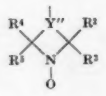
W^{15} is hydrogen or hydroxyl;

W^{16} is hydrogen, acyloxy of 1 to 3 carbon atoms, or hydroxy, with the proviso that W^{15} and W^{16} are both the

same when *n* equals 1, and when hydroxy oxo is intended; W^{17} is hydrogen or alkyl of 1 to 3 carbon atoms;

with the proviso that one of W^{15-17} is -X*-A*, wherein X* is

wherein T is oxygen or =NH and Z is hydrocarbylene of from 1 to 10 carbon atoms, and A* is of the formula:



wherein:

R^{2-5} is alkyl of from 1 to 3 carbon atoms and Y' is a trivalent hydrocarbon radical of from 1 to 3 carbon atoms and having from 0 to 1 site of ethylenic unsaturation.

3,853,915

9-OR

10-HALO-4H-BENZO[4,5]CYCLO-HEPTA[1,2-B]THIOPHEN-4-ONES

Jean-Pierre Bourquin, Magden/Aargaw; Gustav Schwarb, Allschwil, and Erwin Waldvogel, Aesch, all of Switzerland, assignors to Sandoz Ltd., Basle, Switzerland

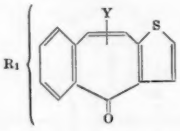
Continuation-in-part of Ser. No. 278,244, Aug. 7, 1972, Pat. No. 3,749,786, which is a continuation-in-part of Ser. No. 120,738, March 3, 1971, Pat. No. 3,682,930, and a continuation-in-part of Ser. No. 178,449, Sept. 7, 1971, Pat. No. 3,770,728. This application Aug. 8, 1972, Ser. No. 278,738

Claims priority, application Switzerland, Mar. 11, 1970, 3598/70; July 31, 1970, 11593/70; Sept. 24, 1970, 14120/70; Feb. 4, 1971, 1632/71

Int. Cl. C07d *63/18*

U.S. Cl. 260—332.3 P **8 Claims**

1. A compound of the formula:



in which

R_1 is hydrogen, halogen or alkoxy of 1 to 4 carbon atoms, and

Y is chlorine or bromine in the 9 or 10 position.

3,853,916

ALKYLATION OF ETHERS

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed June 12, 1972, Ser. No. 261,891

Int. Cl. C07d *15/12*

U.S. Cl. 260—340.6 **9 Claims**

1. A process for the alkylation of an alkyl or saturated cyclic ether consisting of carbon, hydrogen and oxygen atoms and having at least one hydrogen atom attached to a primary or secondary carbon atom and containing no functional groups other than the ether linkage, comprising the steps of reacting said ether with 1-alkene having from 2 to 20 carbon atoms in the presence of an organic peroxy compound selected from the group consisting of peracetic acid, persuccinic acid, dimethyl peroxide, diethyl peroxide, dipropyl peroxide, di-t-butyl peroxide, butyryl peroxide, lauroyl peroxide, benzoyl peroxide, tetrahydronaphthalene peroxide, urea peroxide, t-butyl perbenzoate, t-butyl hydroperoxide, methylcyclohexyl hydroperoxide, cyclohexanone peroxide, and cumene hydroperoxide and also in the presence of hydrogen chloride in amount of from about 0.5:1 to about 4:1 weight percent of said organic peroxy compound, said ether and 1-alkene being reacted at a temperature in the range of from about 50° to about 300°C. and at least as high as the decomposition temperature of said organic peroxy compound and a pressure of from about 1 to about 100 atmospheres, and recovering the resultant alkylated ether.

3,853,917

PROCESS FOR THE PREPARATION OF D-GLUCAROLACTONE DERIVATIVES

Masanori Okada, Niiza; Kiyoshi Okui, Tsuchiura; Hidenori Takahashi, Omiya, and Arata Tanoura, Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

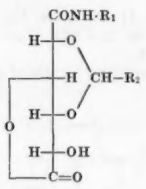
Filed Dec. 19, 1972, Ser. No. 316,540

Claims priority, application Japan, Dec. 28, 1971, 46-105684

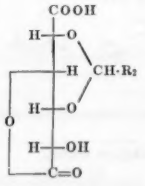
Int. Cl. C07d *15/04*

U.S. Cl. 260—340.7 **5 Claims**

1. A process for the preparation of a D-glucarolactone derivative represented by the formula:



wherein R_1 is selected from the group consisting of alkyl having 1–6 carbon atoms, alkoxyalkyl having 2–4 carbon atoms, cyclohexyl, allyl, phenyl, phenyl substituted with chloride or alkoxy having 1–2 carbon atoms as a substituent, benzyl and benzyl substituted with chloride as a substituent; R_2 represents phenyl, phenyl substituted with chloride, alkyl having 1–3 carbon atoms or ethoxy or methoxy as a substituent; which comprises the steps of reacting a compound of the formula:



wherein R_2 is as defined above, with chloroformic acid ester of the formula

Cl.COOR

wherein R represents alkyl having 1–10 carbon atoms, followed by reacting with an amine represented by the formula R_1NH_2

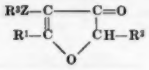
wherein R_1 is as defined above, in the presence of a condensing agent at a temperature below room temperature.

3,853,918
DIKETONES AND THEIR USE

Godefridus Antonius Maria van den Ouweland, Zevenaar, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Dec. 13, 1971, Ser. No. 207,631
Claims priority, application Great Britain, Dec. 21, 1970, 60562/70
Int. Cl. C07d *5/10*
U.S. Cl. 260—347.2 **7 Claims**

1. A method for the preparation of a substituted 2,3-dihydrofuran-3-one of the structure

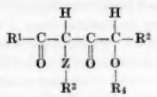


or a tautomeric structure thereof in which

—Z represents an oxygen or sulphur atom

—R^1 and R^2 represent hydrogen or lower hydrocarbyl groups with the proviso that the number of carbon atoms of R^1 and R^2 taken together is from 1–4.

—R^3 represents a hydrogen, acyl derived from carboxylic acid, or alkyl group containing 1–24 carbon atoms comprising reacting in the presence of an acid a diketone of the general formula



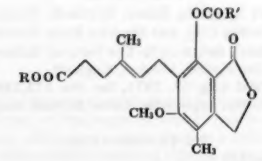
or a tautomeric structure thereof in which R^1, R^2, and R^3 and Z represent groups indicated above and R^4 represents an alcohol protecting group resistant to alkali but removable under acid reaction conditions selected from the class consisting of a C^1–C^{20} alkyl group, 2-tetrahydrofuranyl group, 2-tetrahydropyranyl group, a methoxyethyl or ethoxyethyl group, or an α- or β- unsaturated group selected from an allyl, benzyl, or a meta- or para-methoxy phenyl.

3,853,919
MYCOPHENOLIC ACID DERIVATIVES

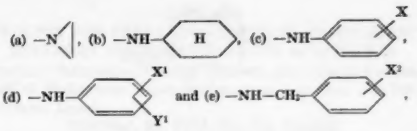
Takasi Mori, Tokyo; Sakae Takaku, Ageo, and Seikichi Suzuki, Tokyo, all of Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1973, Ser. No. 332,102
Claims priority, application Japan, Feb. 24, 1972, 47-18447
Int. Cl. C07d *5/06*
U.S. Cl. 260—343.3 **32 Claims**

1. a compound of the formula:



wherein R represents lower alkyl; R′ is selected from the group consisting of



wherein X is selected from the group consisting of hydrogen, alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, R″CO—wherein R″ is alkyl having 1 to 4 carbon atoms, chlorine group containing 2 to 5 carbon atoms, a halogen atom, alkoxy-carboxyl having 2 to 5 carbon atoms, R‴CONH—wherein R‴is alkyl having 1 to 4 carbon atoms, dialkylaminoethoxycarbonyl having 5 to 7 carbon atoms, dialkylamino having 2 to 8 carbon atoms, hydroxy, carboxy, sulfamoyl, nitro, cyano and phenyl; X^1 and Y^1 are the same or different and are selected from the group consisting of alkyl having 1 to 4 carbon atoms, hydroxy, carboxy and nitro; X^2 is selected from the group consisting of hydrogen, chlorine, and dialkylamino having 2 to 8 carbon atoms.

3,853,920
PRODUCTION OF SODIUM ERYTHORBATE CRYSTALS OF MICROCRYSTALLINE SIZE

Stuart R. Andrews, North Brunswick, and Lewis D. Morse, Princeton, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 879,912, Nov. 20, 1969, abandoned, and a continuation-in-part of Ser. No. 100,782, Dec. 22, 1970, abandoned. This application Oct. 28, 1971, Ser. No. 193,587
Int. Cl. C07d *5/12*
U.S. Cl. 260—343.7 **9 Claims**

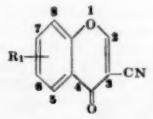
1. The method of producing sodium erythorbate of microcrystalline size which comprises forming a substantially saturated solution of sodium erythorbate in water at a temperature between about 35°C and 85°C, then rapidly combining this hot solution with sodium chloride under constant agitation conditions, and separating the formed sodium erythorbate microcrystals from the brine.

3,853,921
PROCESS FOR THE PREPARATION OF 3-CYANOCHROMONES

Sylvester Klutchko, Hackettstown, and Maximilian von Strandtmann, Rockaway, both of N.J., assignors to Warner-Lambert Company, Morris Plaines, N.J.

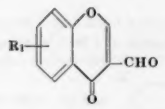
Filed Dec. 4, 1972, Ser. No. 312,155
Int. Cl. C07d *7/34*
U.S. Cl. 260—345.2 **1 Claim**

1. A process for preparing a compound of the formula I:



I

wherein R_1 represents hydrogen, halogen or lower alkoxy, which comprises refluxing together a compound of Formula II,



II

formic acid, hydroxylamine, or a salt thereof and sodium formate.

3,853,922

PROCESS FOR PRODUCING TETRAHYDROFURAN

Mitsuo Yamaguchi, and Yoichi Kageyama, both of Yokohama, Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 847,467, Aug. 4, 1969, abandoned. This application June 13, 1972, Ser. No. 262,186

Claims priority, application Japan, Aug. 10, 1968, 43-56889; Aug. 10, 1968, 43-56890

Int. Cl. C07d *5/02*

U.S. Cl. 260—346.1 R **7 Claims**

1. A process for producing tetrahydrofuran which comprises:

a. reacting gaseous hydrogen with at least one compound selected from the group consisting of maleic acid, maleic anhydride, fumaric acid, succinic acid, succinic anhydride, esters of said acids, and γ-butyrolactone at 150° to 400°C and at a hydrogen pressure of 100 to 600 atmospheres in the presence of an effective amount of a catalyst system until said tetrahydrofuran is formed,

1. the effective components of said catalyst system consisting of an intimate mixture of one part metallic nickel, 0.04 to 10 parts of at least one oxide of a metal selected from the group consisting of beryllium, magnesium, calcium, boron, aluminum, titanium, vanadium, chromium, manganese, zinc, zirconium, tungsten, molybdenum, and thorium, and 0.02 to 10 parts of at least one metallic member selected from the group consisting of iron and cobalt, said parts being by weight.

3,853,923

2-SUBSTITUTED-(2-HYDROXY-3-LOWER ALKAMINOPROPOXY)-BENZOFURANS

Kiyoshi Ito, Otsu; Masahiko Ikemoto, Honmachi; Kazuhiko Kimura, Otsu, and Teruo Nakanishi, Kyoto, all of Japan, assignors to Kakenyaku Kako Co., Ltd., Tokyo, Japan

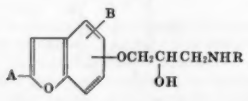
Filed May 8, 1972, Ser. No. 251,454

Claims priority, application Japan, May 13, 1971, 46-32145; July 14, 1971, 46-52333; Oct. 28, 1971, 46-86109; Jan. 6, 1972, 47-4395

Int. Cl. C07d *5/42*

U.S. Cl. 260—346.2 R **21 Claims**

1. A benzofuran derivative of the formula:



wherein A is —COR′,

or ethyl; B is hydrogen atom when A is -COR′, or

or —COR″ substituted at 3 or 4 position of benzofuran nucleus when A is ethyl; R is alkyl having 1 to 5 carbon atoms; R′ is alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 3 carbon atoms or phenyl group; R″ is alkyl having 1 to 4 carbon atoms, phenyl or phenylalkyl wherein the alkyl moiety has 1 to 2 carbon atoms; and a pharmaceutically acceptable acid addition salt thereof.

3,853,924

RECOVERY OF TRIMELLITIC ACID FROM PSEUDOCUMENE LIQUID PHASE OXIDATION EFFLUENT

Delbert H. Meyer, Naperville, and George E. Johnston, Chicago, both of Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Dec. 22, 1970, Ser. No. 100,817

Int. Cl. C07c *63/32*

U.S. Cl. 260—346.3 **4 Claims**

1. A process of recovery of trimellitic acid from the liquid effluent from an oxidation zone in which pseudocumene is oxidized under liquid phase conditions in the presence of: acetic acid having downward from 5 weight percent water in an amount of 2 to 6 weight parts of such acetic acid per weight part of pseudocumene and in the presence of one or more heavy metal oxidation catalysts and a side chain oxidation initiator at a final oxidation temperature of 385° to 455°F., which recovery comprises the combination of the steps of concentrating the liquid oxidation effluent and precipitating a first crop of trimellitic acid by vaporizing a mixture of acetic acid and water vapors in a flash zone operated at a pressure below that at which such effluent was formed down to atmospheric pressure, displacing and replacing the mother liquor from that concentrate with acetic acid having downward from 5 weight percent water in an amount producing a first slurry having 60 to 70 percent solids and 40 to **30** percent liquid on a weight basis, concentrating the displaced mother liquor to a second concentrate by evaporation of all but 10 20 weight percent of its acetic acid content, displacing and replacing the acetic acid content of such second concentrate with acetic acid having downward from 5 weight percent water in an amount producing a second slurry having 60 to 70 percent solids and 40 to 30 percent liquid on a weight basis, combining such first and second slurries and removing acetic acid therefrom.

3,853,925

URETHANES

Crispin Stuart Leworthy Baker, Hertford; Douglas Barnard, Welwyn Garden City, and Maurice Read Porter, Stevenage, all of England, assignors to The Natural Rubber Producers Research Association, London, England

Filed Aug. 17, 1971, Ser. No. 172,589

Claims priority, application Great Britain, Aug. 18, 1970, 39804/70

Int. Cl. C07c *131/08*

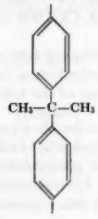
U.S. Cl. 260—396 N **4 Claims**

1. A compound having the formula: $R(.NH.CO.O.N=Q=O)_m(.NCO)_n(.NH.CO.YX)_p$

where

m is 1 or 2

n is 0, 1 or 2
p is 0, 1 or 2
$(n + p)$ is 1 or 2
Q is benzene, benzene substituted by one or more alkyl groups of up to four carbon atoms or naphthalene, and is in the p-quinonoid form
R is an aromatic or saturated aliphatic hydrocarbon group having a functionality of $(m + n + p)$
Y is an oxygen atom and X is phenyl, alkylphenyl, naphthyl, alkylnaphthyl, aliphatic saturated hydrocarbyl



or

YX is primary aliphatic saturated hydrocarbyl amino.

3,853,926

17β-HYDROXY-16,16-DIMETHYLESTER-4-EN-3-ONE

David A. Tyner, Glenview, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed May 29, 1973, Ser. No. 364,340
Int. Cl. C07c *169/22*
U.S. Cl. 260—397.4 **1 Claim**

1. 17β-Hydroxy-16,16-dimethylestr-4-en-3-one.

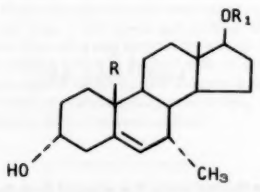
3,853,927

PROCESS FOR THE PREPARATION OF 3 ALPHA-HYDROXY STEROIDS

Joyce F. Grunwell, Hamilton, and Harvey D. Benson, Cincinnati, both of Ohio, assignors to Richardson-Merrell, Inc., New York, N.Y.

Filed Nov. 1, 1973, Ser. No. 411,790
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.5 **6 Claims**

1. A process for the preparation of 3α-hydroxy steroids having the formula



wherein R is hydrogen or methyl, and R_1 is selected from the group consisting of hydrogen or acyl having from one to 12 carbon atoms which comprises reacting a corresponding 3-oxo steroid with a highly hindered lithium or potassium trialkylborohydride in a suitable solvent at a temperature of from −80° to 25° C. to form a steroidal borane; hydrolyzing the steroidal borane which forms; and recovering the 3α-hydroxy steroid therefrom.

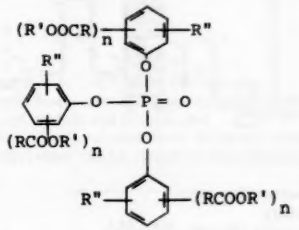
3,853,928

PROCESS FOR PREPARING TERTIARY PHOSPHORIC ESTERS OF PHENOLATED FATTY ACID ESTERS

Hirokazu Nakayama; Yoshiaki Inamoto, and Atsushi Goukon, all of Wakayama, Japan, assignors to Kao Soap Co. Ltd., Tokyo, Japan

Filed Dec. 20, 1972, Ser. No. 316,682
Claims priority, application Japan, Dec. 28, 1971, 46-2774
Int. Cl. A23j *7/00*; **C07f** *9/02*
U.S. Cl. 260—403 **3 Claims**

1. A compound of the formula



wherein

n is a number from 1 to 2,

RCOOR' is a moiety of an ester of a fatty acid selected from the group consisting of undecylenic acid, myristoleic acid, palmitoleic acid, oleic acid, elaidic acid, erucic acid, linoleic acid, linoelaidic acid, conjugated linoleic acid, linolenic acid, conjugated linolenic acid, cyclopentene carboxylic acids, methylcyclopentene carboxylic acids and cyclohexene carboxylic acids, esterified with an alkanol having one to eight carbon atoms, cyclohexanol or methylcyclohexanol, and R'' is H or CH_3.

3,853,929

METHOD FOR CONTINUOUSLY EFFECTING SOLID-CATALYZED LIQUID PHASE REACTIONS IN A BUBBLE COLUMN-CASCADE REACTOR

Wolf Cornelius, Werne; Bodo Gross, Unna; Jochen Meiners, Unna-Siddinghausen; Eckhart Blass, and Kurt-Henning Koch, both of Clausthal-Zellerfeld, all of Germany, assignors to Schering AG, Berlin, Bergkamen, Germany

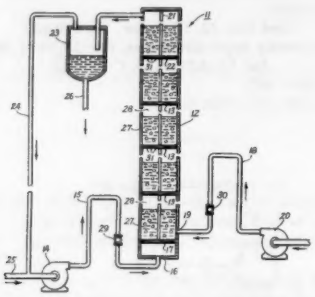
Filed Nov. 14, 1972, Ser. No. 306,198
Claims priority, application Germany, Nov. 22, 1971, 2157737
Int. Cl. B01j *9/16*; **C08h** *9/00*
U.S. Cl. 260—407 **4 Claims**

1. A method for continuously effecting a solid-catalyzed liquid phase reaction which comprises flowing a liquid phase reagent, in the presence of said solid catalyst, and an inert gas upwardly through a walled vertically columnar reaction zone separated into a plurality of reaction compartments by perforated plates equidistantly stacked exactly horizontally in said reaction zone, adjacent plates being separated vertically by a distance at least three times the diameter of said columnar reaction zone and being tightly joined to the interior wall thereof, each plate having a plurality of apertures therein of the same size distributed uniformly over the area of the plate, the total free aperture area of the plates being from 0.5 percent to 15 percent of the cross-sectional area of said columnar reaction zone, the flow of inert gas and liquid through said reaction zone being such that

$\text{Reynolds number}_{Ld}/\text{Reynolds number}_{Gd} = 0.1$,

whereby a gas cushion is formed under said plates, and wherein

Reynolds number$_{Ld} = w_{Ld} \times d \times \sigma_L / 72_L$,
Reynolds number$_{Gd} = w_{Gd} \times d \times \sigma_G / 72_G$,
w = velocity



d = aperture diameter
ρ = density
η = dynamic viscosity
and the subscripts d, G, and L refer respectively to aperture diameter, the gas phase, and the liquid phase.

3,853,930
PROCESS FOR TREATING LANOLIN AND LANOLIN DERIVATIVES

Thomas B. Richey, 576 North Chestnut St., Westfield, N.J. 07090

Filed Feb. 4, 1972, Ser. No. 223,718
Int. Cl. C09f 5/10
U.S. Cl. 260—428 **4 Claims**

1. The method of reducing the pesticide content of pesticide-containing lanolin and lanolin derivatives, which comprises continually feeding a pesticide-containing lanolin material whose content of said pesticide is in excess of about five parts per million of said feed material, into a vertically disposed jacketed chamber and causing the feed material in said chamber to flow downwardly along the inner surface of the chamber in the form of a wiped film of relatively minute thickness, while maintaining the jacket of the chamber at a temperature of 300° to 550° C., and simultaneously subjecting the feed material to the action of an inert vaporous stripping agent, while maintaining the flowing film under a vacuum of between two and thirty millimeters mercury, absolute pressure, said material having incorporated therein, prior to the feeding thereof to said chamber, a minor proportion of paraffinic hydrocarbon diluent, said diluent having a boiling point such that said diluent will be removed from the lanolin or lanolin derivatives under the aforesaid operating conditions, thereby to promote removal of said pesticide from the lanolin or lanolin derivative.

3,853,931
PRODUCTION OF HYDROCARBYL ALUMINUM HYDRIDES

Thomas J. Kondis, Pittsburgh, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Jan. 15, 1973, Ser. No. 323,960
Int. Cl. C07f 5/06
U.S. Cl. 260—448 A **10 Claims**

1. In a process for reacting aluminum with hydrogen and an olefin or aluminum hydrocarbyl compound, the improvement which comprises reacting the hydrogen and the olefin or aluminum hydrocarbyl compound with an aluminum base alloy powder containing at least 98 percent by weight aluminum and 0.1–2.0 percent by weight lithium, thereby increasing the reactivity of the aluminum.

3,853,932
PROCESS FOR PRODUCING SILANOL END-STOPPED POLYMERS OF LOW MOLECULAR WEIGHT

John S. Razzano, Troy, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Dec. 28, 1973, Ser. No. 429,380
Int. Cl. C07f 7/08
U.S. Cl. 260—448.2 E **10 Claims**

1. A process for producing low molecular weight silanol end-stopped diorganopolysiloxane polymers comprising (a) contacting a cyclic trimer of the formula,

$$(R_2SiO)_3$$

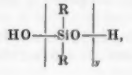
where R is selected from the class consisting of alkyl radicals, haloalkyl radicals and cycloalkyl radicals of one to eight carbon atoms, vinyl radicals, phenyl radicals and mixtures thereof with an acid-activated hydroaluminum silicate clay, in the presence of water and a polar solvent, and (b) separating the desired product.

3,853,933
CONTINUOUS PROCESS FOR PRODUCING POLYSILOXANE OILS UTILIZING A CARBON BLACK CATALYST

George R. Siciliano, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Jan. 14, 1974, Ser. No. 433,095
Int. Cl. C07f 7/08
U.S. Cl. 260—448.2 E **18 Claims**

1. A continuous process for producing diorganopolysiloxane oils of 3 to 50,000 centipoise viscosity at 25° C comprising continuously passing a fluid siloxane feed mixture having therein siloxanes selected from the class consisting of $(R_2SiO)_x$,



$[R_3Si]_2O$ and

and mixtures thereof where R is selected from the class consisting of alkyl radicals, alkenyl radicals, cycloalkyl radicals and mixtures thereof of one to 15 carbon atoms, x varies from 3 to 8, y varies from one to 10 and z varies from one to 10, into contact with a catalyst bed of acid-activated granular carbon black having a carbon to acid ratio of 10 parts to 1 part, to 40 parts to 1 part which catalyst bed is maintained at 85° to 150°° C and over which catalyst bed there is maintained a vacuum of 5 to 200 millimeters of Hg and removing from the catalyst bed a product stream containing the diorganopolysiloxane of 3 to 50,000 centipoise viscosity at 25° and various low boiling siloxanes.

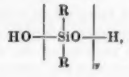
3,853,934
CONTINUOUS PROCESS FOR PRODUCING POLYSILOXANE OILS

George R. Siciliano, Ballston Lake, and Norman G. Holdstock, Scotia, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Jan. 14, 1974, Ser. No. 433,123
Int. Cl. C07f 7/08
U.S. Cl. 260—448.2 E 12 Claims

1. A continuous process for producing linear diorganopolysiloxane oils of a viscosity from 3 to 50,000 centipoise at 25° C comprising (a) continuously passing into a first column a feed mixture composed of compounds selected from the class consisting of

$$(R_2SiO)_x,$$



and

$$[R_3Si]_2O$$

and

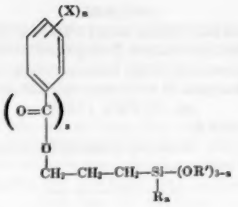
and mixtures thereof, where R is selected from the class consisting of alkyl radicals, alkenyl radicals and cycloalkyl radicals of one to 15 carbon atoms, x varies from 3 to 10, y varies from 1 to 10 and z varies from 1 to 10; (b) continuously passing into said first column from 0 to 1.0 percent by weight of said feed mixture of an acid-activated hydroaluminum silicate and 0.1 to 1 percent by weight of said feed mixture of a diatomaceous earth; (c) maintaining said first column at a temperature in the range of 150° – 200° C; (d) continuously removing from column first columnn a fluid siloxane mixture such that the fluid siloxane mixture emanating from said first column has less than 1,000 parts per million of water; (e) transferring the fluid siloxane mixture from said first column into a second column which is packed with an acid-activated hydroaluminum silicate which second column is maintained at 150°–200° C; and (f) continuously transferring the desired product stream out of the second column.

3,853,935
ARALKYL SILANES SUBSTITUTED IN THE NUCLEUS

Ismail Roshdy, Schulstr. 21, 5206 Neunkirchen, and Paul Janssen, Am Zaarshauschen 17, 506 Bensberg-Refrath, both of Germany

Filed Mar. 30, 1973, Ser. No. 346,528
Claims priority, application Germany, Mar. 30, 1972, 2215629
Int. Cl. C07f 7/10, 7/18
U.S. Cl. 260—448.8 R 18 Claims

1. A novel organosilicon compound of the formula



wherein X is NO_2 or NH_2

n is 1 or 2

z is 0 or 1

a is 0, 1 or 2 or 1, 2 or 3 when R is halogen

R is independently selected from the group consisting of alkyl, aryl, aralkyl and halogen and

R′ is independently selected from the group consisting of alkyl, alkyl ether radical, polyalkyl ether radical and aryl.

3,853,936
PROCESS FOR DISTILLATION OF TOLUENE DIISOCYANATE

Norman L. Van Winkle, Lake Charles, La., assignor to Olin Corporation, New Haven, Conn.

Filed Feb. 5, 1973, Ser. No. 329,309
Int. Cl. C07c 119/04
U.S. Cl. 260—453 SP 11 Claims

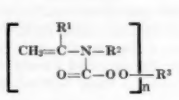
1. In a toluene diisocyanate recovery and purification process wherein two toluene diisocyanate streams are charged to a distillation column and distilled therein, namely, a high quality stream, containing no more than about 1 percent by weight of high boiling impurities, and a low quality stream, containing a proportion of high boiling impurities which is at least four times that of said high quality stream, the improvement which comprises charging said streams to said distillation column individually through separate inlets, the inlet for said high quality stream being located in the upper two-thirds, but below the top one-tenth, of said column, and the inlet for said low quality stream being located in the bottom one-third of said column, said high quality stream being charged to said column at a feed rate which is from about 1 to about 20 times that of said low quality stream.

3,853,937
N-(1-ALKENYL)-PEROXYCARBONIC ESTERS

Herbert Naarmann, Wattenheim, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhein, Germany

Filed Apr. 5, 1973, Ser. No. 348,180
Int. Cl. C07c 69/00
U.S. Cl. 260—453 R 2 Claims

1. An organic peroxide of the formula (I):



in which

R^1 is hydrogen or methyl;

R^2 is tertiary alkyl of four to eight carbon atoms;

R^3 is tertiary alkyl of four to eight carbon atoms or ditertiary alkylene of eight to ten carbon atoms; and

n is 1 or 2.

3,853,938

THIOPROPIONIC ACID DERIVATIVES

Ernest Haddock, and William J. Hopwood, both of Kent, England, assignors to Shell Oil Company, New York, N.Y.

Filed Jan. 2, 1973, Ser. No. 320,236
Int. Cl. C07c *153/07*
U.S. Cl. 260—455 R 1 Claim

1. S-ethyl-N-benzoyl-N-(4-fluorophenyl)-2-aminothiopropionate.

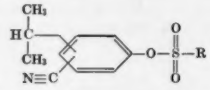
3,853,939

ISOPROPYL-CYANOPHENYL ALKYLSULFONATES

Richard D. Partos, Brentwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 17,902, March 9, 1970, Pat. No. 3,818,102. This application Sept. 1, 1972, Ser. No. 285,685
Int. Cl. C07c *143/68*
U.S. Cl. 260—456 R 3 Claims

1. A compound of the formula



wherein R is alkyl having from 1 through 18 carbon atoms.

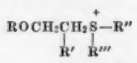
3,853,940

INNER SALTS OF ALKYL ALKOXYALKYL HYDROXYALKYL SULFONIUM SULFATES

Giuliana C. Tesoro, Dobbs Ferry, and Andrew Orozlan, Elmhurst, both of N.Y., assignors to J. P. Stevens & Co., Inc., New York, N.Y.

Division of Ser. No. 227,717, Oct. 2, 1962, abandoned, which is a continuation-in-part of Ser. No. 165,017, Jan. 8, 1962, Pat. No. 3,419,566. This application Mar. 22, 1971, Ser. No. 126,868
Int. Cl. C07c *141/02*
U.S. Cl. 260—458 2 Claims

1. A compound having the formula



wherein R is lower alkyl,
R′ is a member selected from the group consisting of hydrogen and lower alkyl, and
R″ is the group

wherein
A is OSO_3^- and
R‴ is alkyl.

3,853,941

PREPARATION OF ORTHOBORATES OF MONOHYDRIC ALCOHOLS AND PHENOLS

William V. Hough, Gibsonia; Clarence R. Guibert, Adams Township, Butler County, and Gerald T. Hefferan, Butler, all of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Mar. 1, 1971, Ser. No. 119,904
Int. Cl. C07f *5/04*
U.S. Cl. 260—462 R 14 Claims

1. A method of preparing a trimethoxyborane comprising the step of reacting in the liquid phase a boron-containing reactant selected from the group consisting of boric oxide, boric acid and trimethoxyboroxine with methanol in the presence of a water absorbing molecular sieve having a pore diameter of about 3A to about 4A, the molecular sieve being present in an amount sufficient to absorb substantially all of the water produced by the reaction, and separating the resultant liquid phase containing the trimethoxyborane from the molecular sieve.

3,853,942

PROCESS FOR THE MANUFACTURE OF CYCLOPROPA-NECARBONITRILE

Yel S. Sury, Mobile, Ala., and Henry C. Grace, Jr., Greensboro, N.C., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sept. 13, 1973, Ser. No. 397,211
Int. Cl. C07c *121/02, 121/46*
U.S. Cl. 260—464 4 Claims

1. In the process of preparing cyclopropanecarbonitrile comprising the steps of reacting, in a dried inert organic solvent at elevated temperatures, 4-halobutyronitrile and a basic cyclization agent, and recovering the cyclopropanecarbonitrile product, the improvement which comprises reacting under refluxing condition 4-chlorobutyronitrile or 4-bromobutyronitrile with an alkali alkoxide in which the alkyl moiety has from 1 to 4 carbon atoms, the molar ratio of the nitrile to the alkoxide ranging from stoichiometric equivalency to about 10% molar excess of alkoxide, to obtain the cyclopropanecarbonitrile product and an alcohol byproduct, and removing the alcohol by-product substantially simultaneously with its formation.

3,853,943

CYCLOPENTADIENES IN WHICH AT LEAST FOUR OF THE RING CARBONS CARRY CYANO SUBSTITUENTS AND METHODS FOR THEIR PREPARATION

Owen Wright Webster, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 678,536, Oct. 27, 1967, Pat. No. 3,536,694, which is a continuation-in-part of Ser. No. 255,068, Jan. 30, 1963, abandoned. This application June 15, 1970, Ser. No. 46,530
Int. Cl. A01n 9/20; C06b *15/00*; C07c *121/48*
U.S. Cl. 260—464 12 Claims

1. A cyanocyclopentadiene compound in which at least four ring carbon atoms carry cyano substituents, said compound selected from the group consisting of:
1-amino-2,3,4,5,5-pentacyanocyclopentadiene; and a compound of the formula

wherein:
M^+ represents one equivalent of an ion selected from the class consisting of hydrogen ion, metal ion, ammonium ion, and C_{1-18} alkyl-substituted ammonium ion wherein the metal ion is selected from Li^+, Na^+, Mg^{++}, Al^{+++}, K^+, Ca^{++}, Ti^{++++}, Cr^{+++}, Mn^{++}, Fe^{++}, Fe^{+++}, Co^{++}, Co^{+++}, Ni^{++}, Ni^{+++}, Cu^{++}, Zn^{++}, Rb^+, Sr^{++}, Mo^{+++}, Ag^+, Cd^{++}, Sn^{++}, Cs^+, Ba^{++}, Hg^{++}, Pb^{++}, or Bi^{+++}; and
Q is selected from the class consisting of hydrogen, amino, cyano, hydroxy, carboxy, alkoxycarbonyl wherein the alkoxy portion thereof contains up to and including 18 carbon atoms, chlorine, bromine, iodine C_{1-18} alkyl, aryl of up to and including 18 carbon atoms, p-hydroxyphenyl, nitro, and mercapto.

3,853,944
SUBSTITUTED NITROALKYL NITRATE AND PEROXYNITRATE

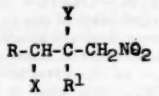
William M. Cummings, Fishkill, N.Y., assignor to Texaco Inc., New York, N.Y.

Division of Ser. No. 144,212, May 17, 1971, Pat. No. 3,732,283. This application Dec. 4, 1972, Ser. No. 311,993The portion of the term of this patent subsequent to May 8, 1990, has been disclaimed.

Int. Cl. C07c *121/16*

U.S. Cl. 260—465.1 **3 Claims**

1. A nitroalkyl nitrate characterized by the formula:



where R and R^1 are hydrogen or alkyl or from 1 to 10 carbons, where X is —CN and where Y is $—ONO_2$ or $—OONO_2$.

3,853,945
PROCESS OF PREPARING ALPHA-SUBSTITUTED ACRYLIC COMPOUNDS

Francis Weiss, and Raymond Rusch, both of Pierre-Benite, France, assignors to Ugine Kuhlmann, Paris, France

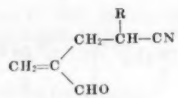
Continuation-in-part of Ser. No. 328,096, Dec. 4, 1963, abandoned, Continuation-in-part of Ser. Nos. 413,350, Nov. 23, 1964, abandoned, and Ser. No. 647,341, June 20, 1967, abandoned. This application July 17, 1968, Ser. No. 745,379

Claims priority, application France, Dec. 8, 1962, 62.918000; Nov. 21, 1963, 63.954478

Int. Cl. C07c *121/02*

U.S. Cl. 260—465.4 **8 Claims**

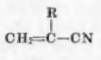
1. A process for preparing an α-substituted acrylic compound of the formula



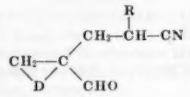
wherein R is H or CH_3 which process comprises:

reacting acrolein with cyclopentadiene or anthracene at a temperature sufficient to form a Diels Alder adduct;

treating the adduct thus formed with an acrylonitrile of the formula



in the presence of a base and at a temperature in the range between 0° and 80°C. to form a Michael's adduct of the formula



wherein R has the same meaning as stated above and D is the dienic moiety of cyclopentadiene or anthracene;

pyrolyzing, thereafter, the Michael adduct at a temperature sufficiently high to remove the dienic moiety; and

recovering therefrom said α-substituted acrylic compound.

3,853,946
PROCESS FOR THE PREPARATION OF AMINOMETHYLENE MALONONITRILE

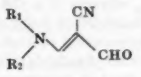
Willy Leimgruber, Montclair, and Manfred Weigele, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 197,968, Nov. 11, 1971, Pat. No. 3,742,015, which is a division of Ser. No. 42,528, June 1, 1970, Pat. No. 3,655,716, which is a division of Ser. No. 719,834, April 9, 1968, Pat. No. 3,542,848. This application Mar. 5, 1973, Ser. No. 338,018

Int. Cl. C07c *121/02*

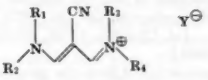
U.S. Cl. 260—465.5 R **1 Claim**

1. A proces of preparing an aldehyde compound of the formula:



wherein R_1 and R_2 are lower alkyl, containing from 1 to 6 carbon atoms;

comprising treating an aqueous solution containing a halide salt of the formula:



wherein R_1 and R_2 are as above; R_3 and R_4 are lower alkyl containing from 1 to 6 carbon atoms; and Y^- is a halide ion;

with an inorganic base to raise the pH of said solution to a range of from about 7 to 9 to form said aldehyde compound.

3,853,947
PURIFYING 1,4-DICYANOBUTENES

Leopold Golser; Erich Schwartz, both of Ludwigshafen, and Hans-Martin Weitz, Frankenthal, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Mar. 7, 1973, Ser. No. 338,758

Claims priority, application Germany, Mar. 8, 1972, 2211060

Int. Cl. C07c *121/30*

U.S. Cl. 260—465.8 R **3 Claims**

1. A process for recovering pure 1,4-dicyanobutane from 1,4-dicyanobutene which contains chlorinated or brominated impurities, by treatment with hexamethylenediamine and recovery of the pure 1,4-dicyanobutene, wherein the 1,4-dicyanobutene to be purified is treated in the liquid phase with 1,6-hexamethylenediamine or with dihexamethylenetriamine and the 1,4-dicyanobutene is separated from the reaction products of the added hexamethylenediamine with the halogen compounds.

3,853,948
CATALYTIC ISOMERIZATION OF 2-METHYL-3-BUTENENITRILE TO LINEAR PENTENE-NITRILES

William C. Drinkard, Jr., Orange, Tex., and Richard V. Lindsey, Hockessin, Del., assignors to E. I. du Pont de Nemours & Company, Wilmington, Del.

Continuation-in-part of Ser. No. 77,725, Oct. 2, 1970, abandoned, which is a continuation-in-part of Ser. No. 678,171, Oct. 26, 1967, Pat. No. 3,536,748, which is a continuation-in-part of Ser. No. 509,432, Nov. 23, 1965, Pat. No. 3,496,215. This application Sept. 5, 1972, Ser. No. 286,131The portion of the term of this patent subsequent to Oct. 27, 1987, has been disclaimed.

Int. Cl. C07c *121/02, 121/30*

U.S. Cl. 260—465.9 5 Claims

1. In a process of isomerizing 2-methyl-3-butenenitrile to produce at least one linear pentenenitrile which comprises contacting 2-methyl-3-butenenitrile, at a temperature in the range of 10°–200°C. with a zerovalent nickel catalyst of the formula $Ni(PXYZ)_4$, wherein X is OR, Y and Z are of the group consisting of R and OR, R being of the group consisting of alkyl and aryl hydrocarbyl radicals of up to 18 carbon atoms and aryl hydrocarbyl radicals of up to 18 carbon atoms substituted with a radical of the group consisting of chloride and alkoxy radicals, wherein any two of X, Y and Z can be joined to form a lower alkylene or the ethylenedioxy group;

the improvement which comprises carrying out the process of isomerizing in the presence of at least a 1:1 mole ratio of a compound of the formula PXYZ to the catalyst of formula $Ni(PXYZ)_4$.

3,853,949
δ-METHYLENE-1-CYCLOPENTENE-1-PENTANOIC ACID

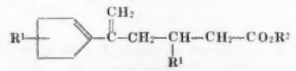
William T. Comer; James W. Rayburn, and Davis L. Temple, all of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Continuation-in-part of Ser. No. 246,309, April 21, 1972, abandoned. This application Oct. 26, 1972, Ser. No. 300,942

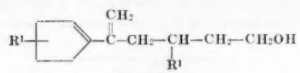
Int. Cl. C07c *61/26, 69/74*

U.S. Cl. 260—468 L 11 Claims

1. A compound selected from the group consisting of diene carboxylic acids and esters of Formula I



FORMULA I



FORMULA II

wherein

R^1 is hydrogen or methyl with the proviso that whenever R^1 is methyl the R^1-cyclopentenyl radical is selected from the group consisting of 3-methyl-1-cyclopentenyl and 3-methyl-1-cyclopentenyl;

R^2 is hydrogen, lower alkyl; or whenever R^2 is hydrogen the non-toxic pharmaceutically acceptacle metal salts thereof.

3,853,950
15-LOWER ALKOXY PGA COMPOUNDS

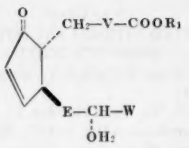
Frank H. Lincoln, Jr., Portage; John E. Pike, and Gilbert A. Youngdale, both of Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 140,251, May 4, 1971, abandoned. This application Jan. 26, 1973, Ser. No. 326,912

Int. Cl. C07c *61/36, 69/74*

U.S. Cl. 260—468 D 9 Claims

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein E is $-CH_2CH_2-$ or trans$-CH=CH-$; wherein R_1 is hydrogen, alkyl of one to eight carbon atoms, inclusive, or a pharmacologically acceptable cation; wherein R_2 is alkyl of one to five carbon atoms, inclusive; wherein V is either $-(CH_2)_5-$ or cis$-CH=CH-(CH_2)_3-$, provided that E is $-CH_2CH_2-$ only when V is $-(CH_2)_5-$; and wherein W is 1-pentyl or cis 1-pent-2-enyl provided that W is cis 1-pent-2-enyl only when E is trans $-CH=CH-$ and V is $-CH=CH-(CH_2)_3-$.

3,853,951
PREPARATION OF 9-OXO-13-TRANS-PROSTENOIC ACID ESTERS BY ALANATE ADDITION TO CYCLOPENTENONE

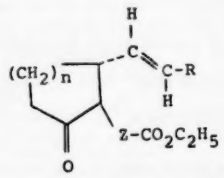
Karel Francis Bernady; Middleton Brawner Floyd, Jr., both of Suffern; John Frank Poletto, Nanuet, all of N.Y.; Robert Eugene Schaub, Upper Saddle River, and Martin Joseph Weiss, Oradell, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 162,711, July 14, 1971, abandoned. This application Apr. 30, 1973, Ser. No. 355,844

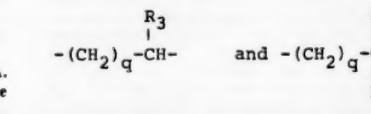
Int. Cl. C07c *67/74, 61/36*

U.S. Cl. 260—468 D 10 Claims

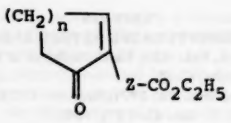
1. The process of preparing compounds of formula:



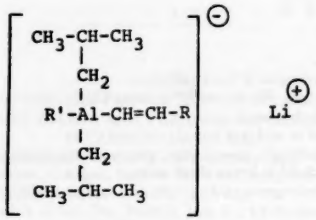
wherein *n* is the integer 1 or 2; R is selected from the group consisting of a straight chain alkyl group having from three to 10 carbon atoms, a straight chain alkyl group having from two to six carbon atoms and having one branched methyl group, a straight chain alkenyl group having from four to six carbon atoms, and a straight chain ω-chloroalkyl group having from three to six carbon atoms; and Z is a divalent radical selected from the group consisting of those of the formulae: $-(CH_2)_m-$, $-(CH_2)_q-O-CH_2-$, $-(CH_2)_q-S-CH_2-$,



wherein *m* is an integer from 1 to 8, inclusive, *q* is an integer from 3 to 6, inclusive, and R is an alkyl group having from one to three carbon atoms; which comprises contacting a compound of the formula:



wherein n and z are as hereinabove defined, with up to 1.5 molar equivalents of a reagent of the formula:



wherein R' is a lower alkyl group and R is as hereinabove defined, in an inert solvent at from about 5°C. to about 40°C. for a period of time sufficient for a substantial degree of conjugate 1,4-addition to take place, hydrolyzing the so formed intermediate alanate-enolate adduct with excess dilute aqueous mineral acid, and recovering the so formed product from the reaction mixture.

3,853,952

2-ETHYNYLCYCLOPROPANE COMPOUNDS AND PROCESS FOR THE PREPARATION THEREOF

Yukichi Kishida; Masafumi Yoshimoto, and Noboru Ishida, all of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

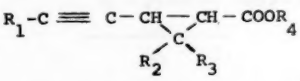
Filed June 23, 1971, Ser. No. 156,049

Claims priority, application Japan, June 29, 1970, 45-56798

Int. Cl. C07c *69/76*

U.S. Cl. 260—469 **12 Claims**

1. A compound having the formula



wherein R_1 is a phenyl group of a phenyl group substituted with a trifluoromethyl, halogen, a lower alkyl, or a lower alkoxy group, R_2 and R_3 are the same or different and each represents a hydrogen atom or a phenyl group, and R_4 represents a hydrogen atom, a lower alkyl group or benzyl group, and an alkali metal, an alkaline earth metal or an aluminum salt thereof.

3,853,953

ALKYL (N-PHENYLSULFONYLOXY) CARBAMATES

Joseph Hellerbach, Basel, Switzerland; Armin Walser, West Caldwell, N.J.; Hermann Bretschneider, Innsbruck, Austria, and Werner Rudolph, Lorrach, Germany, assignors to Hoffman-La Roche Inc., Nutley, N.J.

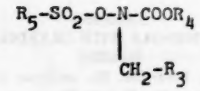
Division of Ser. No. 111,731, Feb. 1, 1971, Pat. No. 3,772,271. This application June 25, 1973, Ser. No. 373,070

Claims priority, application Switzerland, Feb. 11, 1970, 1956/70

Int. Cl. C07c *161/00*

U.S. Cl. 260—470 **4 Claims**

1. A compound of the formula



wherein R_3 signifies hydrogen, lower alkyl or aryl selected from the group consisting of phenyl, halo substituted phenyl and lower alkyl substituted phenyl; R_4 signifies lower alkyl and R_5 is aryl selected from the group consisting of phenyl, halo substituted phenyl and lower alkyl substituted phenyl.

3,853,954

TYROSINE DERIVATIVES

Ado Kaiser, Neu-Frenkendorf; Wolfgang Koch, Riehen; Marcel Scheer, Basel, and Uwe Wolcke, Bottmingen, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

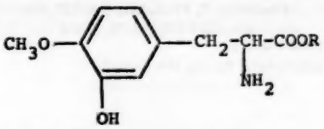
Filed Nov. 3, 1971, Ser. No. 195,472

Claims priority, application Switzerland, Nov. 10, 1970, 16630/70

Int. Cl. C07c *101/08*

U.S. Cl. 260—471 A **17 Claims**

1. The L-antipode of the formula:



wherein R is hydrogen or lower alkyl group; or pharmaceutically acceptable salts thereof.

3,853,955

NOVEL BASIC SUBSTITUTED-ALKYLIDENAMINO-OXY ALKYL-CARBOXYLIC-ACID ESTERS

Jan Van Dijk, and Johannes Maria Antonius Zwagemakers, both of Van Houtenlaan, Weesp, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

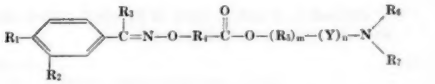
Filed June 10, 1971, Ser. No. 151,793

Claims priority, application Netherlands, June 11, 1970, 7008493; Mar. 2, 1971, 7102715

Int. Cl. C07c *101/24*

U.S. Cl. 260—472 **24 Claims**

1. A compound selected from the group consisting of the amines of the formula:



wherein R_1 is a moiety selected from the group consisting of hydrogen, halogen, CF_3 and CH_3, R_2 is a moiety selected from the group consisting of chlorine and hydrogen, R_3 is a moiety selected from the group consisting of hydrogen and CH_3, R_4 is alkylene of up to 5 carbon atoms, *m* and *n* are each 0 or 1 and m + n is 1 or 2, R_5 is alkylene of up to 6 carbon atoms which may be substituted by phenyl, Y is a cyclic hydrocarbon radical of 5 or 6 carbon atoms, R_6 is a moiety selected from the group consisting of hydrogen, alkyl of up to 8 carbon atoms, cycloalkyl of 3 to 8 carbon atoms, phenyl, tolyl, and acetyl and (p.chloro α-methylbenzylidene) aminooxyacetyl and R_7 is a moiety selected from the group consisting of hydrogen, alkyl of up to 8 carbon atoms, alkyl of up to 8 carbon atoms substituted with hydroxyl with the proviso that when R_6 and R_7 are each alkyl or hydroxy substituted alkyl R_6 and R_7 together do not contain more than 10 carbon atoms and the acid addition salts thereof with pharmaceutically acceptable acids.

3,853,956

REACTION OF PHENOLS WITH OLEFINS AND CUPRIC HALIDE

Louis Schmerling, Riverside, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 20, 1969, Ser. No. 808,981
Int. Cl. C07c *65/12*
U.S. Cl. 260—473 S 6 Claims

1. The preparation of O-alkylated, C-alkylated, and halogenated phenols by reacting a phenolic compound with an unsaturated hydrocarbon selected from the group consisting of monoalkenes, cyclomonoalkenes and arylmonoalkenes of from 2 to about 20 carbon atoms in the presence of cupric halide in solid form at a temperature in the range of from about 100° to about 300°C. and a pressure in the range of from atmospheric to about 100 atmospheres, and recovering the resultant products.

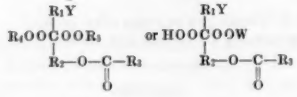
3,853,957

OXY SUBSTITUTED PEROXYKETALS

Antonio Joseph D'Angelo, and Wilbur H. McKellin, both of Buffalo, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed May 7, 1968, Ser. No. 727,336
Int. Cl. C07c *69/76, 69/02*
U.S. Cl. 260—476 R 7 Claims

1. A peroxyketal having the formula



or

in which

R_1 and R_2 are C_1–C_{10} alkylene, C_7–C_{10}-phenalkylene or C_3–C_{12}-cycloalkylene; or

$-R_1-C-R_2-$ is a cyclohexylene ring;

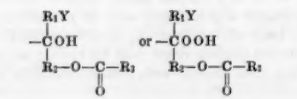
Y is H or

Y is attached to a carbon atom of R_1 which carbon atom also contains an attached hydrogen atom;

is attached to a carbon atom of R_2 which carbon atom also contains an attached hydrogen atom;

R_3 is C_1–C_{12}-alkyl, C_3–C_{12}-cycloalkyl; C_7–C_{12}-phenylalkyl; phenyl, naphthyl, chlorophenyl or nitrophenyl;

R_4 and R_5 are H, C_4–C_{12}-alkyl or C_4–C_{12}-cycloalkyl; and W is



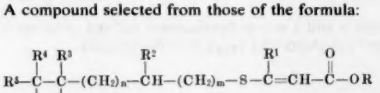
3,853,958

4-THIA UNSATURATED ESTERS AND ACIDS

Clive A. Henrick, Palo Alto, Calif., assignor to Zoecon Corporation, Palo Alto, Calif.

Filed Nov. 11, 1971, Ser. No. 197,953
Int. Cl. C07c *149/20*
U.S. Cl. 260—481 R 13 Claims

1. A compound selected from those of the formula:



(A)

wherein,

R is hydrogen or lower alkyl;

each of R^1, R^2, R^4 and R^5 is lower alkyl;

R^3 is hydrogen or methyl;

each of *m* and *n* is 1 or 2;

Z is hydrogen, lower alkyl, chloro or the group $-OR^6$ in which R^6 is lower alkyl; and

Z′ is hydrogen or taken with Z, a carbon-carbon bond.

3,853,959

MERCAPTOALKANOIC ACID ESTERS OF POLYOXYPOLYOLS

Bryan Dobinson, Duxford; Bernard Peter Stark, Stapleford, and Eric Whichell Young, Saffron Walden, all of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Division of Ser. No. 107,595, Jan. 18, 1971, Pat. No. 3,746,685. This application Feb. 4, 1972, Ser. No. 223,705
Claims priority, application Switzerland, Feb. 5, 1970, 5664/70
Int. Cl. C07c *149/20, 149/22*
U.S. Cl. 260—481 R 2 Claims

1. A polymercaptan prepared by the esterification of a polyhydric alcohol of the formula

$$G\text{—}\text{-}\ -CO(CH_2)_5O-_n\ H\ ]_p$$

wherein G is a saturated aliphatic hydrocarbon residue having from two to six carbon atoms, *n* is a positive integer such that the alcohol has a molecular weight of at least 350 and at most 6,000, *p* is a positive integer of at least 2 and at most 6, with a mercaptocarboxylic acid of the formula

$$HOOC-R^2-SH$$

where $R^2$is $-CH_2-$, $-CH_2CH_2-$ or

wherein said reaction is conducted by heating said alcohol and said acid together in an inert solvent in the presence of a strong acid catalyst.

3,853,960

PROCESS FOR THE MANUFACTURE OF PENTHAERYTHRITOL TETRACARBAMATE

Milton Crowther, Salisbury, N.C., assignor to Proctor Chemical Company, Inc., Salisbury, N.C.

Continuation of Ser. No. 54,637, July 13, 1970, abandoned. This application May 9, 1972, Ser. No. 251,676
Int. Cl. C07c *125/04*
U.S. Cl. 260—482 B 7 Claims

1. A process for the manufacture of pentaerythritol tetracarbamate which comprises:

a. providing a reaction mixture consisting essentially of pentaerythritol, 6 to 10 mols of a carbamate ester of an alkanol having a boiling point below 150°C. for each mol of pentaerythritol and between about 0.1 to 10 percent of a transesterification catalyst based upon the combined weight of pentaerythritol and said ester,

b. heating the reaction mixture to a temperature between 135° and 170°C. to produce transesterification between the pentaerythritol and said ester,
c. removing alkanol produced by said transesterification from the reaction mixture by distillation,
d. adjusting the temperature of the resulting reaction mass to between 90° and 150°C., and
e. separating pentaerythritol tetracarbamate existing as insoluble product in the reaction mass from the remainder of the reaction mass existing as liquid portion at said temperature between 90° and 150°C.

3,853,961

PROCESS FOR THE PRODUCTION OF DICARBOXYLIC ACID ESTERS AND THE CORRESPONDING DICARBOXYLIC ACIDS

Udo Birkenstock, Homberg, Rathingen, and Karlfried Wedemeyer, Cologne, both of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

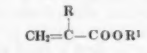
Continuation of Ser. No. 56,009, July 17, 1970, abandoned. This application Dec. 26, 1972, Ser. No. 317,889

Claims priority, application Germany, Aug. 19, 1969, 1942016

Int. Cl. C07c *69/34, 55/02*

U.S. Cl. 260—485 R **3 Claims**

1. A process for the production of dicarboxylic acid esters and the corresponding dicarboxylic acids by reacting diolefins with α,β-unsaturated compounds in the presence of catalysts, wherein 1 mol of a compound corresponding to the general formula



in which R represents hydrogen or a methyl group and R^1 represents hydrogen or a linear or branched lower alkyl radical is reacted with at most 1.95 mols of butadiene in the presence of a nickel catalyst which contains nickel in an oxidation state of less than +2 and which can be modified by donors, or nickel tetracarbonyl at a temperature in the range from about 50° to about 160°C, the unsaturated compounds formed are hydrogenated optionally without being isolated

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3,853,962

NOVEL METHACRYLATE MONOMER

Robert Johns Gander, Whitehouse, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Division of Ser. No. 223,369, Feb. 3, 1972, abandoned. This application Oct. 29, 1973, Ser. No. 410,731

Int. Cl. C07c *69/54*

U.S. Cl. 260—486 R **1 Claim**

1. As a new composition of matter, the methacrylate monomer, 1,3-bis[2,3-di(methacryloxy)-propoxy]-benzene.

3,853,963

PRASTAGLANDIN F TYPE 9-MONOACYLATES

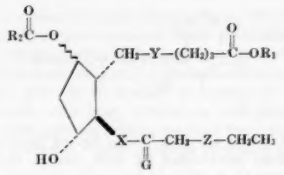
Walter Morozowich, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 30, 1971, Ser. No. 214,477

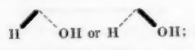
Int. Cl. C07c *69/10, 69/18, 69/30, 69/62, 69/78, 79/46*

U.S. Cl. 260—488 R **6 Claims**

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein (a) X is trans—CH=CH— or $-CH_2CH_2-$, and Y and Z are both $-CH_2CH_2-$, or (b) X is trans—CH=CH—, Y is cis—CH=CH—, and Z is $-CH_2CH_2-$ or cis—CH=CH—; wherein G is



wherein R_1 is hydrogen or alkyl of one to eight carbon atoms, inclusive; wherein R_2 is hydrogen; alkyl of one to 17 carbon atoms, inclusive, or alkyl of one to 12 carbon atoms, inclusive, substituted with one to three halo atoms, inclusive.

3,853,964

GUANIDINE SALTS OF CHLORINATED AND/OR BROMINATED AMINABENZENE SULFONIC ACIDS

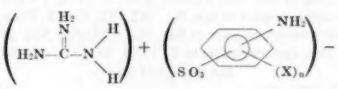
John Clifford Summers, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 54,017, July 10, 1970, Pat. No. 3,718,658. This application Nov. 9, 1972, Ser. No. 305,083

Int. Cl. C07c *143/63*

U.S. Cl. 260—501.12 **2 Claims**

1. Compounds having the general formula:



wherein

n is a positive integer from 1 to 4, and

X independently represents Cl or Br.

3,853,965

ANILIC ACIDS OF 3-SUBSTITUTED 2,4,6-TRIIODOANILINES

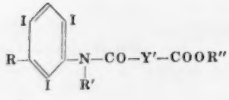
James H. Ackerman, Bethlehem, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 181,249, Sept. 16, 1971, Pat. No. 3,803,221, which is a division of Ser. No. 841,604, July 14, 1969, Pat. No. 3,660,408, which is a continuation-in-part of Ser. No. 715,583, March 25, 1968, abandoned. This application Aug. 13, 1973, Ser. No. 387,688

Int. Cl. C07c *149/40*

U.S. Cl. 260—516 **6 Claims**

1. A compound of the formula



wherein Y′ is an alkylene bridge having from one to eight carbon atoms interrupted by from one to three members selected from O, S, SO and SO_2, said members, when more than one, being separated by at least two carbon atoms; R is (lower-alkanoyl)NH, (lower-alkanoyl)$NHCH_2$, (lower-alkanoyl)N(lower-alkyl), (lower-alkoxy-lower-alkanoyl)NH, (lower-alkoxy-lower-alkanoyl)N(lower-alkyl), HOOC—Y′—CO—NH, or HOOC—Y′—CO—N(lower-alkyl): R′ is hydrogen, lower-alkyl, or hydroxy-lower-alkyl; and R″ is hydrogen or lower-alkyl.

3,853,966

N-CHLOROTHIO UREAS

Melancthon S. Brown, deceased, late of 671 Spruce St., Berkeley, Calif. 94707 (by Gustave K. Kohn, administrator)

Continuation-in-part of Ser. Nos. 88,212, Nov. 9, 1970, Pat. No. 3,755,437, and Ser. No. 189,732, Oct. 15, 1971,. This application May 8, 1972, Ser. No. 250,907

Int. Cl. C07c *155/02*

U.S. Cl. 260—545 R **2 Claims**

1. N-chlorothio-N-methyl-N′-2-fluorophenyl urea.

3,853,967

PROCESS FOR PREPARATION OF ALDEHYDE AND KETONE ORGANIC PEROXIDE COMPOSITIONS AND THE USE THEREOF AS POLYMERIZATION INITIATORS

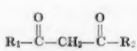
Newton G. Leveskis, 49 Vallecito Ln., Walnut Creek, Calif. 91789

Division of Ser. No. 43,329, June 4, 1970, , which is a continuation-in-part of Ser. No. 702,782, Feb. 5, 1968, , which is a continuation-in-part of Ser. No. 473,855, July 21, 1965,. This application Feb. 5, 1973, Ser. No. 329,918

Int. Cl. C08f *21/00*

U.S. Cl. 260—861 **26 Claims**

1. In the method for cross linking an essentially linear unsaturated polyester of a polycarboxylic acid and a polyol with a vinyl monomer comprising subjecting said polyester and vinyl monomer to free radical polymerization conditions in the presence of a polymerization initiating amount of an organic peroxide composition, the improvement comprising using as said organic peroxide composition a composition prepared by concurrently reacting a beta dione of up to about 20 carbon atoms of the structure:



in which R_1 and R_2 are individually selected from the group consisting of alkyl, cycloalkyl, and aryl with a different carbonyl compound selected from the group consisting of ketones and aldehydes of up to about 20 carbon atoms free from aliphatic unsaturation and containing only carbon, hydrogen, and oxygen in a ratio of 1 mole of beta dione to about 3–20 equivalent weights of different carbonyl compound based upon the number of co-reactive carbonyl groups therein in an acidic hydrophilic fluid medium containing sufficient aqueous hydrogen peroxide to form appreciable amounts of organic peroxides therewith.

3,853,968

VINYL HALIDE POLYMER IMPACT MODIFIER

Newman M. Bortnick, Oreland; Warren D. Niederhauser, Meadowbrook, and Leonard H. Smiley, Jenkintown, all of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Division of Ser. No. 201,205, Nov. 21, 1971, Pat. No. 3,793,406, which is a continuation-in-part of Ser. No. 91,223, Nov. 19, 1970,. This application Sept. 7, 1973, Ser. No. 396,269

Int. Cl. C08f *29/24*

U.S. Cl. 260—876 R **5 Claims**

1. A process for making impact modified polyvinyl halide polymers and copolymers comprising the steps:

A. forming a rubbery, first stage polymer by emulsion polymerization of a monomer charge of 70 to 99.9 weight percent of an alkylacrylate compound, the ester moiety having two to eight carbons; 0 to 30 weight percent of a vinylaromatic monomer interpolymerizable therewith; and 0.1 to 10 weight percent of a polyfunctional crosslinking monomer, weights based on the total weight of the step (A) monomer charge,

B. adding to the resulting rubber polymer stage produced in step (A) from 70 to 99.9 weight percent of a vinylaromatic monomer, and 0 to 30 weight percent of an alkyl acrylate, wherein the alkyl group of said acrylate has about 2 to 8 carbon atoms interpolymerizable therewith, and 0.1 to 10 weight percent of a second polyfunctional crosslinking monomer weight based on the total weight of the step (B) monomer charge; and emulsion polymerizing the second monomer charge to form a second stage polymer on/or within the rubbery polymer stage produced in Step (A);

C. adding to the polymer resulting from steps (A) and (B) a third monomer charge of 80 to 100 weight percent of an alkyl methacrylate, wherein the alkyl groups have 1 to 4 carbon atoms, and emulsion polymerizing the third monomer charge to form a third stage polymer on the polymers in Steps (A) and (B), and

D. adding to the resulting polymer resulting from Steps (A), (B) and (C), and based on the weight of said resulting polymer, a fourth monomer charge of 80 to 100 weight percent of a vinyl halide monomer, and emulsion polymerizing the fourth monomer charge to form a fourth stage polymer substantially entangled within the first and second stages resulting from Steps (A) and (B); wherein the first stage (A) monomers comprise about 20 to 45 parts, said second stage (B) monomers comprise about 20 to 35 parts, said third stage (C) monomers comprise about 20 to 35 parts, and said fourth stage (D) monomers comprise about 6 to 90 parts; and wherein the particle size of the resultant emulsion polymer is about 700–1,100 A.

E. adding the resulting heteropolymer to a polyvinyl halide polymer, whereby an impact resistant thermoplastic material is formed, said impact modified polyvinylhalide resin comprising 98 to 60 weight percent of said polyvinyl halide and about 2 to 40 weight percent of the heteropolymer.

3,853,969

CRYSTALLIZABLE STEREOBLOCK RUBBERY COPOLYMERS

Emmanuel G. Kontos, New Haven, Conn., assignor to United States Rubber Company, New York, N.Y.

Filed Oct. 17, 1960, Ser. No. 63,050

Int. Cl. C08f *15/04*

U.S. Cl. 260—878 B **18 Claims**

1. A crystallizable stereoblock rubbery copolymer, said stereoblock copolymer being amorphous in the undeformed state and capable of crystallization upon stretching and having at least three successive and alternating polymeric blocks, one of said polymeric blocks being an amorphous non-

crystallizable atactic copolymer of (1) a monomer selected from the group consisting of ethylene and propylene and (2) a dissimilar 1-olefin having from 3 to 12 carbon atoms, the molar ratio of said monomer to said 1-olefin being from 20:80 to 80:20, another of said polymeric blocks being selected from the group consisting of a crystallizable homopolymer of a 1-olefin having from 2 to 12 carbon atoms and a crystallizable copolymer of (1) a monomer selected from the group consisting of ethylene and propylene and (2) a dissimilar 1-olefin having from 3 to 12 carbon atoms, the molar ratio of said monomer to said 1-olefin being in the ranges from 5:95 to 20:80 or 80:20 to 95:5.

3,853,970

VINYL CHLORIDE GRAFT POLYMERS AND PROCESS FOR PREPARATION THEREOF

Joseph J. Dietrich, Painesville, Ohio, assignor to Diamond Shamrock Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 180,546, Sept. 15, 1971, abandoned, which is a continuation-in-part of Ser. No. 761,840, Sept. 23, 1968, abandoned. This application Aug. 3, 1973, Ser. No. 385,392

Int. Cl. C08f *29/22*

U.S. Cl. 260—878 R **7 Claims**

1. A process for preparing an easily processed graft copolymer of vinyl chloride on a preformed ethylene/vinyl acetate copolymer which comprises reacting in an aqueous suspending medium for a time period of from 1 to 12 hours a mixture containing, by weight, from 60% to 95% of vinyl chloride monomer and from 5% to 40% of a preformed ethylene/vinyl acetate copolymer at a temperature of 90–165° C, while injecting a monomer-soluble free-radical type polymerization initiator at a prescribed rate into the reaction mixture during the reaction, said preformed ethylene/vinyl acetate copolymer containing, by weight, from 10% to 40% polymerized vinyl acetate and having an inherent viscosity of 0.50 to 1.50 as measured at 30° C, employing a solution containing 0.25 g of copolymer in toluene.

3,853,971

ORGANIC COATING COMPOSITION FOR AN ELECTRICAL STEEL SHEET

Hirotada Kato; Kazuo Nakamura, and Toshiya Wada, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 5, 1974, Ser. No. 439,951

Claims priority, application Japan, Feb. 12, 1973, 48-17268

Int. Cl. C08f *24/50*

U.S. Cl. 260—901 **5 Claims**

1. An organic coating composition adapted for use in the electrical steel sheet which comprises, as the main components, (A) 10 parts by weight of polyvinyl alcohol, (B) 0.5 to 5 parts by weight, as the solid value, of styrene resin selected from the group consisting of styrene homopolymer and copolymers of styrene with vinyl acetate or alkyl acrylate and (C) 2 to 10 parts by weight, as the solid value, of a water-soluble acrylic resin consisting essentially of at least one monomer selected from the group consisting of alkyl acrylate and alkyl methacrylate, said styrene resin containing at least 50% by weight of styrene.

3,853,972

PROCESS FOR RAPIDLY MOLDING ARTICLES FROM FOAMABLE THERMOPLASTIC PARTICLES INVOLVING MULTIPLE FOAMING OPERATIONS

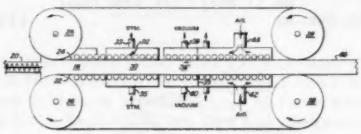
Erling Berner, 2890 Cavey Crest Circle, Allison Park, Pa. 15101

Filed July 11, 1972, Ser. No. 270,669

Int. Cl. B29d *27/00*

U.S. Cl. 264—53 **16 Claims**

1. The process of rapidly molding articles from foamable beads comprising pre-expanding foamable beads containing an excess of a volatizable liquid foaming agent with heat under conditions to form pre-expanded beads containing at least sufficient, residual quantity of foaming agent about 0.05 to 2% in the expanded periferal portions of said beads to allow rapid heat transfer and effect further expansion of said pre-expanded beads with heat, contacting said pre-expanded beads with a hot gaseous heating medium for a short period sufficient to contact the outer periferal expanded portions of



said pre-expanded beads and to continue expansion thereof by activating the residual forming agent in the expanded portion of said bead, said heat supplied by said medium being sufficient to soften the surface portions of said beads enough to cause the expanded bead surfaces to cohere, and molding said beads continuously in a molding channel in which the moldable mass of heated beads is moved at a rate exceeding about 50 feet per minute

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3,853,973

ISOSTATIC HOT-PRESSING PROCESS FOR MANUFACTURING DENSE SINTERED ARTICLES

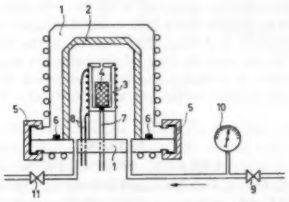
Karl Heinz Hardtl; Heinrich Knufer, both of Aachen, Germany, and Andreas Leopoldus Stuijts, Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 21, 1972, Ser. No. 317,427

Claims priority, application Germany, Dec. 22, 1971, 2163889

Int. Cl. F27b *9/04*

U.S. Cl. 264—65 **5 Claims**



1. In the method of forming a polycrystalline body having a density greater than 98 percent of the theoretical density thereof in which particulate polycrystalline material is compacted and sintered to form a coherent dense body, the improvement comprising:

a. introducing lattice defects into said particulate polycrystalline material,

b. compacting said particulate polycrystalline material into a body, and

c. exposing said compacted body directly and on all sides to an inert gas at a pressure of from 25 to 300kg/cm² while heating said body to a temperature of about 300°C for a time sufficient to sinter and increase the density of said body to between 98 and 100 percent of the theoretical density.

3,853,974
METHOD OF PRODUCING A HOLLOW BODY OF SEMICONDUCTOR MATERIAL

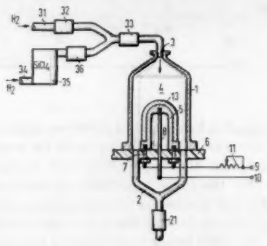
Konrad Reuschel, Vaterstetten, and Wolfgang Dietze, Munich, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 87,202, Nov. 5, 1970, abandoned. This application Feb. 21, 1973, Ser. No. 334,294

Claims priority, application Germany, Apr. 6, 1970, 2016339

Int. Cl. B01j *17/28;* **B29c** *13/04*

U.S. Cl. 264—81 **13 Claims**



1. The method of producing an at least unilaterally open, hollow body of silicon by thermally reducing a gaseous carrier halide or hydride of silicon and precipitating the segregating silicon upon a graphite carrier heated to the segragating temperature of the gaseous carrier and thereafter removing the graphite carrier from the resulting hollow silicon body, said method comprising the steps of supplying to the heated graphite carrier a mixture of hydrogen and said gaseous carrier halide or hydride of silicon in a molar ratio of said hydrogen to said gaseous carrier within the range from 1:0.005 and 1:0.5 corresponding substantially to the reaction equlibrium at the segregation temperature to thereby avoid the formation of crystallites or dendrites; applying a flow rate to precipitate 0.002 – 0.1 g Si/h cm^2, wherein Si denotes silicon, *h* denotes a time unit of one hour and cm^2 denotes a surface unit of one square centimeter and relates to the surface area upon which the semiconductor material is to be precipitated, until the precipitated silicon body has reached a layer thickness of at least 1 micron; and thereafter increasing the flow rate of the mixture to increase the rate of precipitation above the rate of precipitation in forming said layer thickness of at least 1 micron to an amount within the range of 0.05 – 0.2 g Si/h cm^2.

3,853,975
CERAMIC PRODUCTION

Eugene E. Olson, Oakland, and Ronald L. Clendenen, Orinda, both of Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Mar. 13, 1972, Ser. No. 234,399

Int. Cl. C04b *15/14*

U.S. Cl. 264—82 **14 Claims**

1. The process for preparing a metal ferrite of the formula $MO{\cdot}nFe_2O_3$ wherein M is at least one divalent metal selected from the group consisting of barium, strontium and lead and n has a value of from 3 to 6.5, said ferrite having improved physical and magnetic properties, which consists essentially of the steps:

a. preparing an admixture of solid particles comprising intimate agglomerates of (1) one mole of less than 0.1 micron grains of at least one oxide selected from the group consisting of barium oxide, strontium oxide and lead oxide and (2) from 3 to 6.5 moles of less than 0.1 micron grains of ferric oxide, with from about 0.1 to about 6 percent by weight of at least one metal fluoride of the Group IA and Group IIA metals of atomic number 3 through 56 of the Periodic Table;

b. heating said mixture at about 500°C to 900°C for not more than 24 hours, thereby forming crystallites of divalent metal ferrite; and

c. hot-pressing the metal ferrite composition of (b) at from 600°C to 1,100°C and at from 1,000 to 30,000 psi directly into a solid metal ferrite body having a density of at least 95 percent of theoretical and crystallites having a uniform average size of less than 3 microns and an orientation of at least 90 percent.

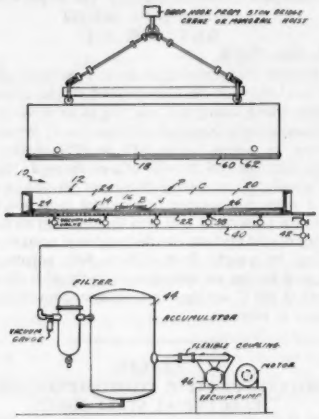
3,853,976
METHOD FOR CASTING SLAB-FACED PANELS

Paul S. Kelsey, Delray Beach, Fla., assignor to K. F. Brick Company, Inc., East Windsor Hill, Conn.

Filed June 23, 1970, Ser. No. 49,152

Int. Cl. B32b *31/06*

U.S. Cl. 264—90 **3 Claims**



1. A process for manufacturing slab-faced panels in a horizontal casting box having a floor provided with a covering of resilient gasketing material, and peripheral sidewalls, comprising:

inserting a placement grid having a plurality of slab-receiving cells in the casting box;

inserting a brick slab in each placement grid cell;

mechanically seating all of said slabs against the resilient gasketing material by concurrently exerting a greater than atmospheric pressure downward mechanical force on the uppermost, backside of all of said slabs;

drawing a vacuum through said gasketing material to maintain the slabs in sealed contact with the resilient gasketing material and to so resiliently compress the gasketing material that it bulges up between adjacent ones of said slabs;

terminating exertion of said downward mechanical force;

removing said placement grid from the casting box;

introducing a hardenable fluid backing composition into the casting box upon the slabs and spreading the composition therein to integrate the slabs into a panel having the lowermost sides of the slabs as a facing and to produce semi-flush concave joint simulations between adjacent ones of said slabs;

allowing the backing composition to harden;

terminating said drawing of vacuum; and

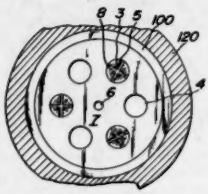
removing the slab faced panel from the casting box.

3,853,977

METHOD FOR PRODUCING MIXED FILAMENTS

Masao Matsui; Susumu Tokura, and Masahiro, Yamabe, all of Osaka, Japan, assignors to Kanebo, Ltd., Tokyo, Japan

Filed Feb. 13, 1973, Ser. No. 332,068
Claims priority, application Japan, Feb. 24, 1972, 47-19451
Int. Cl. D02g 1/20
U.S. Cl. 264—103 10 Claims



1. A method for producing a yarn consisting of a mixture of (A) fibrillated multisegment composite filaments consisting of polyester and polyamide and (B) polyester monofilaments, said polyamide being selected from the group consisting of polyhexamethylene adipamide, polycaproamide and copolyamides thereof, said polyester being selected from the group consisting of polyetheylene terphthalate and copolyesters thereof which comprises simultaneously and separately spinning through a common spinneret (1) monofilaments of polyester having a denier of more than 2 to form component (B) and (2) composite filaments of polyester and polyamide in which the polyester of each composite filament is divided into at least three separate segments by thin interesecting polyamide layers having a substantially uniform thickness throughout their length and which extend radially and diverege in a direction away from their intersection toward the periphery of said composite filament, said polyester segments having a denier of less than 1, said composite filaments being from 40 to 70 percent by weight based on the sum of the weights of said monofilaments and composite filaments, said polyamid being less than 40 percent by weight based on the weight of said composite filaments and said polyamide being less than 30 percent by weight based on the sum of the weights of said monofilaments and composite filaments,

combining the monofilaments and composite filaments, drawing the combined filaments and then false twisting the combined filaments to fibrillate said composite filaments whereby to form a yarn in which the fibrillated segments of said composite filaments and said polyestere monofilaments are entangled and are homogeneously dispersed.

3,853,978

PROCESS FOR PREPARING A FILM OF A TAPERED COPOLYMER OF STYRENE-BUTADIENE OR MIXTURES THEREOF

Shigeki Horiie, Yokohama; Susumu Kurematsu, Zama-Machi; Shinichiro Asai, and Chiaki Saito, both of Tokyo, all of Japan, assignors to Denki Kagaku Kogyo K. K., Tokyo, Japan

Filed , Ser. No. 294,832
Claims priority, application Japan, Oct. 4, 1971, 46-77154; Oct. 25, 1971, 46-83960
Int. Cl. B29d 7/24; C08f 19/08; C08d 3/06
U.S. Cl. 264—210 R 4 Claims

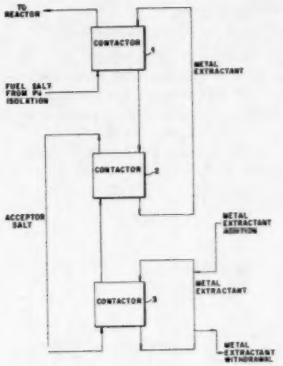
1. A process for producing a film or sheet from a tapered styrene-butadiene copolymer or mixture thereof which comprises melt-extruding through a T die extruder wherein the temperature of the cylinder of the extruder is 140 to 200° and the temperature of the die is from 170° to 220° and stretching at a stretch roller pressure of 0.25 to 25 Kg/cm² a tapered styrene-butadiene copolymer with a molecular weight of 40,000 – 250,000, a total styrene content of 60 – 90 weight percent, and a total butadiene content of 40 – 10 weight percent, wherein said tapered styrene-butadiene copolymer contains: (a) more than 5% of the chain portion having a tapering rate of 0.3 – 4 and a styrene content of 30 – 70 weight percent, (b) more than 35% of the chain portion with a styrene content of more than 80% by weight, and (c) more than 10% of the chain portion with a styrene content from at least 5 weight percent to less than 50 weight percent between high styrene content chain portions which have a styrene content of greater than 80 weight percent.

3,853,979

METHOD FOR REMOVING RARE EARTHS FROM SPENT MOLTEN METALLIC FLUORIDE SALT MIXTURES

Leonard E. McNeese, Oak Ridge; Leslie M. Ferris, Knoxville, and Fred J. Smith, Oak Ridge, all of Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Continuation of Ser. No. 30,422, April 21, 1970, abandoned. This application Aug. 14, 1972, Ser. No. 280,315
Int. Cl. C01g 56/00
U.S. Cl. 423—5 3 Claims



1. In a method for treating a liquid metal fluoride phase containing rare earths and thorium, in which said fluoride phase is contacted with a first liquid bismuth phase circulating in an enclosed cyclic path between a first contactor and a second contactor, said liquid bismuth phase containing a sufficient amount of a reductant selected from the group consisting of lithium and thorium to effect transfer of the rare earths and thorium into the liquid bismuth phase, the improvement which comprises:

1. flowing said rare earth and thorium laden liquid bismuth phase to said second contactor in contact therein with a liquefied acceptor salt phase selected from the group consisting essentially of LiCl, LiBr, and mixtures thereof at a temperature of at least 30° C above the liquidus of said acceptor salt phase to effect selective transfer of the rare earths into the acceptor salt phase, said acceptor salt traversing an enclosed cyclic path between said second contactor and a third contactor; and the
2. flowing said rare earth laden acceptor salt phase to said third contactor in contact therein with a second liquid bismuth phase containing from 0.05 to 0.5 mole fraction lithium to effect transfer of the rare earths from the acceptor salt phase to the second liquid bismuth phase.

3,853,980

RUTHENIUM DECONTAMINATION OF SOLUTIONS DERIVED FROM THE PROCESSING OF IRRADIATED FUELS

Yves Berton, Puy Ste-Reparade; Pierre Chauvet, Bagnols-sur-Ceze; Stephane Clapit, Bagnols-sur-Ceze, and Nicolas Fernandez, Bagnols-sur-Ceze, all of France, assignors to Commissariat A L'Energie Atomique

Filed Feb. 7, 1972, Ser. No. 224,241

Claims priority, application France, Feb. 8, 1971, 71.04147

Int. Cl. C01g *56/00;* **C22b** *61/04*

U.S. Cl. 423—12 **16 Claims**

1. A process for decontaminating ruthenium from a radioactive solution originating from the treatment of irradiated fuels and containing ruthenium comprising adding to said radioactive solution a solution of an oxidizing agent, thereafter simultaneously adding ferrous ions and cupric ions to said radioactive solution, mixing with said radioactive solution sufficient alkaline hydroxide to adjust the pH of the radioactive solution to between 7 and 8.5 so that hydroxides of copper and iron are precipitated with ruthenium adsorbed thereon, and coagulating and filtering the slurry so obtained to remove the ruthenium-containing copper and iron hydroxides therefrom, said process characterized in that the amount of oxidizing agent added to said radioactive solution is just sufficient to destroy any oxidizers of iron therein so that the ferrous ions added to said radioactive solution are not oxidized by said oxidizers.

3,853,981

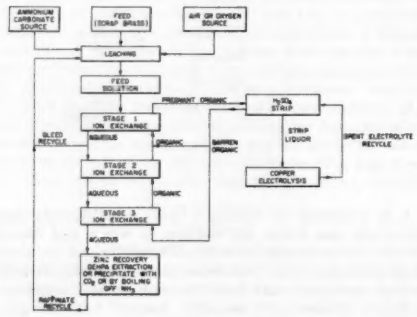
LIQUID ION EXCHANGE PROCESS FOR THE RECOVERY OF METALS

Pablo Hadzeriga, Arvada, Colo., assignor to Cyprus Mines Corporation, Los Angeles, Calif.

Filed June 26, 1972, Ser. No. 266,456

Int. Cl. C01g *3/00, 3/10, 3/14, 9/00;* **C22b** *15/10, 19/24, 19/26*

U.S. Cl. 423—24 **10 Claims**



1. A continuous ion exchange process for the selective recovery of copper and zinc from an ammoniacal ammonium carbonate leach solution in which zinc and copper are continuously added to the leach solution and recovered without build-up of zinc in the leach solution, the process comprising:

a. contacting the leach solution in an ion exchange circuit for copper with a water immiscible organic phase comprising a copper selective ion exchange agent in an organic diluent,

b. recycling a bleed portion of the aqueous phase containing copper and zinc from the ion exchange circuit to the leach solution to maintain the cupric-cuprous ratio therein at an active leaching level,

c. recovering zinc from the remainder of the aqueous phase at a rate substantially equal to the rate of addition of zinc to the leach solution to prevent build-up of zinc in the leach solution,

d. recycling the raffinate from step (c) to the leach solution, and

e. recovering copper from said organic phase.

3,853,982

METHOD FOR RECOVERING VANADIUM-VALUES FROM VANADIUM-BEARING IRON ORES AND IRON ORE CONCENTRATES

Conrad B. Bare, Coopersburg, and Joseph W. Pasquali, Bethlehem, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Nov. 7, 1973, Ser. No. 413,723

Int. Cl. C01g *31/00*

U.S. Cl. 423—68 **32 Claims**

1. An improved method for extracting vanadium-values from vanadium-bearing iron ores wherein said ores are comminuted to a relatively fine particle size and are roasted and leached to produce a vanadate-rich aqueous solution and an undissolved residue containing iron-values, without contaminating said undissolved residues with alkali, said method comprising:

a. mixing said comminuted vanadium-bearing iron ores and at least one calcium containing material taken from the group consisting of limestone, lime, hydrated lime and dolomite,

b. charging the mix into a furnace,

c. roasting the mix at a temperature for a time in an atmosphere containing oxygen to oxidize the vanadium-values therein and to form calcium vanadates,

d. discharging the roasted mix from the furnace,

e. cooling the roasted mix,

f. comminuting the roasted mix,

g. leaching the comminuted roasted mix in an aqueous solution of at least one material taken from the group consisting of sodium carbonate, sodium bicarbonate, potassium carbonate, potassium bicarbonate, ammonium carbonate, ammonium bicarbonate and water sparged with CO_2 gas for a time to react a substantial portion of the calcium vanadates with the leaching agent to form vanadates which are readily soluble in the aqueous solution to form a vanadate-rich aqueous solution and at least one calcium compound taken from the group consisting of calcium carbonate and calcium bicarbonate which is substantially insoluble in the aqueous solution and which remains in the undissolved residue containing iron-values, and

h. separating the vanadate-rich aqueous solution from the undissolved residue containing iron-values.

3,853,983

METHOD FOR IMPROVING BRIGHTNESS OF KAOLINITE CLAYS INCLUDING IRON PYRITES

William F. Abercrombie, Jr.; Frank R. Trowbridge, and Norman Lary McCook, all of Macon, Ga., assignors to J. M. Huber Corporation, Locust, N.J.

Filed May 21, 1973, Ser. No. 362,155

Int. Cl. C01b *33/20*

U.S. Cl. 423—113 **1 Claim**

1. A method for preparing a bright coating kaolin from a crude kaolinitic clay, including discoloring iron-based contaminants in the form of iron pyrites and sulfurous contaminants, comprising:

subjecting said crude clay to comminution;

roasting said comminuted crude clay in an oxidizing atmosphere at a temperature sufficient to oxidize the pyrites but insufficient to drive off the chemically bound water from the kaolinite crystals, said temperature being from 400°C to 600°C, until a substantial cessation of sulfurous fumes is noted, to convert at least a portion of the sulfurous contaminants to a form exhibiting increased magnetic susceptability and increased solubility in chemical leachants selected from the group consisting of zinc dithi-

onite, zinc salts of hydrosulfurous acid, sodium salts of hydrosulfurous acid and combinations thereof;

thereafter forming an aqueous slurry of said roasted clay;

subjecting at least a portion of said slurry to a magnetic field having an intensity of at least 2.4 kilogauss and high field gradients to separate at least part of said converted components; and

thereafter subjecting said slurry to a leaching step employing about 1.2 weight percent leach selected from the group consisting of zinc dithionite, zinc salts of hydrosulfurous acid, sodium salts of hydrosulfurous acid and combinations thereof and to a filtration step.

3,853,984

CONTROLLING THE LEACHING OF KAOLIN CLAY

Charles R. Price, and William F. Abercrombie, Jr., both of Macon, Ga., assignors to J. M. Huber Corporation, Huber, Ga.

Filed Oct. 17, 1973, Ser. No. 407,065

Int. Cl. C01b *33/00, 33/26*

U.S. Cl. 423—131 **13 Claims**

1. An improved method for continuously leaching a dispersed kaolin clay aqueous slurry for removing color impurities therein to provide kaolin clay products having improved optical and rheological properties with an optimum amount of leach compound, said method comprising:

a. forming an aqueous slurry of a finely divided kaolin clay;

b. adding to said aqueous clay slurry a leaching compound capable of reducing insoluble salts present in said clay slurry to a soluble form, said leaching compound comprising a compound containing an active $(S_2O_4)^=$ group or a compound capable of liberating such groups in said slurry;

c. adjusting the pH of the slurry to between about 3.0 to 4.5 by the addition of a sufficient amount of a flocculating agent;

d. measuring the oxidation-reduction potential in the leach compound-clay slurry mixture at a specified time period selected at least 20 minutes after said leach compound addition, said oxidation-reduction potential being measured by inserting the electrode assembly of an oxidation-reduction potentiometric cell into said leach-clay slurry mixture and reading the electric potential between said electrodes in said mixture; and

e. adjusting the amount of the leach compound added to said aqueous clay slurry to provide an oxidation-reduction potential reading value of about −450 to about −300 millivolts, as read with a saturated calomel cell electrode and a dithionite-conditioned platinum electrode assembly.

3,853,985

METHOD OF PURIFYING GASES CONTAINING COMBUSTIBLE GASEOUS OR VAPOROUS IMPURITIES

Karl Winter, Dortmund, Germany, assignor to CEAG Concordia Elekrizitats Aktiengesellschaft, Dortmund, Germany

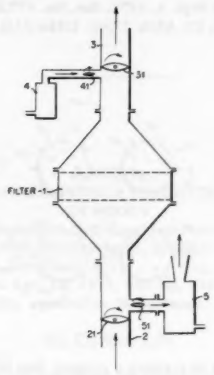
Filed June 15, 1971, Ser. No. 153,345

Claims priority, application Germany, June 19, 1970, 2030153

Int. Cl. B01d *53/34*

U.S. Cl. 423—210 **3 Claims**

1. A method of purifying an air or gas flow of combustible vaporous or gaseous impurities comprising the steps of passing the air or gas through an adsorption zone in one direction thereof to purify said air or gas, charging said zone to a predetermined level, generating a hot inert gas by stoichiometrically burning a hydrocarbon, passing said hot inert gas through said zone in a direction opposite to that of said air or gas flow to desorb the adsorbed combustible gaseous or vaporous impurities from said zone, thereby producing a mixture of a desorbate and said inert gas, and adding to said mixture sufficient



oxygen to enable complete burning of the desorbate and completely burning said desorbate in said mixture.

3,853,986

BUBBLE COLUMN-CASCADE REACTOR AND METHOD

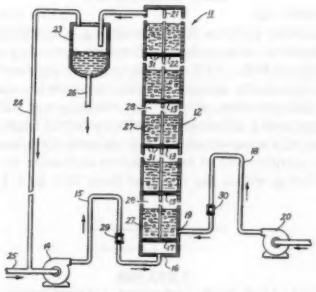
Eckhart Blass; Kurt-Henning Koch, both of Claust Hal-Zellerfeld; Wolf Cornelius, Werne, and Bodo Gross, Unna, all of Germany, assignors to Schering AG, Berlin and Bergkamen, Germany

Filed Nov. 14, 1972, Ser. No. 306,199

Claims priority, application Germany, Nov. 22, 1971, 2157736

Int. Cl. B01j *1/00;* **C07f** *5/06*

U.S. Cl. 423—659 **8 Claims**



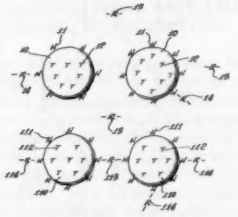
1. A bubble column-cascade reactor for continuously reacting a liquid with a gas or with a non-gaseous reagent in the presence of an inert or reactive gas, said reactor comprising a vertical column having a plurality of perforated plates equidistantly stacked exactly horizontally within said column, adjacent plates being separated vertically by a distance at least 3 times the diameter of the reactor, said plates being tightly joined to the interior wall of said reactor, each plate having a plurality of apertures therein of the same size distributed uniformly over the area of the plate, the total free aperture area of the plates being from 0.5 percent to 15 percent of the cross-sectional area of the empty reactor.

3,853,987

IMMUNOLOGICAL REAGENT AND RADIOIMMUNO ASSAY

William J. Dreyer, 2369 Highland, Altadena, Calif. 91001

Filed Sept. 1, 1971, Ser. No. 177,017
Int. Cl. A61k *27/04*; G01n *31/22*
U.S. Cl. 424—1 8 Claims



1. The process of forming a reagent, that includes:

a. providing multiple water suspendible polymeric particles, and labelling each particle generally throughout the volume with a multiplicity of tracer molecules, and

b. covalently bonding to each particle a multiplicity of molecules of a substance selected from the group consisting of antibodies, antigens and portions and equivalents thereof, by contacting the particles with said molecules in aqueous solution in which the particles are dispersed.

3,853,988

SUSTAINED RELEASED PHARMACEUTICAL COMPOSITIONS

Silvano Casadio; Elvio Sclavi, and Roberto Perego, all of Milan, Italy, assignors to Establissments Arpic S.A., Geneva, Switzerland

Filed Sept. 28, 1971, Ser. No. 184,634
Int. Cl. A61k *27/12*
U.S. Cl. 424—22 6 Claims

1. A matrix suitable for formulating a sustained release pharmaceutical composition, said matrix consisting essentially of from about 80% - 98% by weight of acetylsalicylic acid or a pharmaceutically acceptable salt or complex thereof, dimethyl polysiloxane having a viscosity of 20,000 to 150,000cps and a cellulose derivative selected from the group consisting of a water-insoluble low viscosity cellulose ether or ester, the weight ratio of said cellulose derivative to said polysiloxane being within the range of from 10:1 to 1:1.

3,853,989

DEFOAMER FOR AEROSOL CONCENTRATES

William K. Conn, Springfield, and Chester T. Blake, Jr., Upland, both of Pa., assignors to Philadelphia Quartz Company, Valley Forge, Pa.

Filed Feb. 14, 1968, Ser. No. 705,390
Int. Cl. A61k *7/00*
U.S. Cl. 424—47 10 Claims

1. In the known type of aerosol unit containing a foamable aqueous liquid concentrate and a propellant, the improvement which comprises including in the aerosol unit a finely divided hydrophobic solid siliceous material in the amount of about 0.001–3% based on the weight of said concentrate, said hydrophobic solid siliceous material is a finely divided silica having a particle size between about 7 and 100 μ and a pH above about 2 coated with a hydrophobic organic film.

3,853,990

INFECTIOUS KERATING BACTERIN AND ANTISERUM AND METHOD OF PREPARING SAME

Edward J. Madigan, 4800 W. 31st Ave., and Mark M. Ruszczycky, 4810 W. 31st Ave., both of Denver, Colo. 80212

Continuation of Ser. No. 325,445, Jan. 22, 1973, abandoned, which is a continuation-in-part of Ser. No. 232,282, March 6, 1972, abandoned. This application July 13, 1973, Ser. No. 378,831
Int. Cl. A61k *23/00*
U.S. Cl. 424—87 13 Claims

1. An antiserum for the treatment of infectious keratitis in animals which comprises the serum from the defibrinated blood of cattle which have been successively immunized and hyperimmunized against strains of *Moraxella bovis*, *Corynebacterium* and *Pasteurella multocida*.

3,853,991

ANTIBIOTIC AXENOMYCINE AND METHOD FOR THE PREPARATION THEREOF

Ernesto Cotta; Piera Julita, and Aurora Sanfilippo, all of Midland, Italy, assignors to Societa' Farmaceutici Italia S.p.A., Milan, Italy

Continuation-in-part of Ser. Nos. 832,448, June 11, 1969, abandoned, and Ser. No. 134,477, April 15, 1971, abandoned. This application Sept. 24, 1971, Ser. No. 183,671
Claims priority, application Italy, June 11, 1968, 17570/68; May 4, 1970, 24144/70
Int. Cl. A61k *21/00*
U.S. Cl. 424—121 5 Claims

1. Antibiotic substance axenomycine A which has the elemental analysis 61.74% C, 8.52% H, 28.87% O, a molecular weight of 1451.3, melts from 127° to 142°C forming a transparent brick-red gel, $[\alpha]_D^{23} = +10.50°$ (c = 0.9 in methanol), Rf = 0.49 over silica gel buffered at pH 7 (n.butanol:acetic acid:water:4:0.5:1), a U.V. spectra in methanol giving an absorption maxima at the following wave lengths 249, 254 and 330 mμ and a shoulder at 265 – 268 mμ and an I.R. spectrum in KBr showing bands at the following wave lengths (in μ) 2.94 – 3.44 – 5.78 – 6.00 – 6.16 – 6.24 – 6.88 – 7.25 – 7.41 – 8.61 – 8.85 – 9.35 – 10.00 – 10.40 – 10.95 – 11.8 – 12.5 or its salts with non-toxic acids.

3,853,992

ANTIBIOTIC EM-98

Edward Meyers, East Brunswick; Dorothy Smith Slusarchyk, Belle Mead, and Wen-chih Liu, Princeton Junction, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 242,304, April 10, 1972, abandoned. This application July 5, 1972, Ser. No. 268,994
Int. Cl. A61k *21/00*
U.S. Cl. 424—116 5 Claims

1. A process for producing Antibiotic EM–98 which comprises cultivating *Streptomyces venezuelae* ATCC 21782 in an aqueous nutrient medium comprising an assimilable carbohydrate and an assimilable nitrogen source under submerged aerobic conditions until substantial antibiotic activity is imparted to the medium.

3,853,993

PROCESS FOR INCREASING OXYGEN DIFFUSIVITY AND METHOD FOR TREATING ATHEROSCLEROSIS

John L. Gainer, Charlottesville, Va., assignor to The University of Virginia, Charlottesville, Va.

Division of Ser. No. 356,110, May 1, 1973,. This application June 28, 1973, Ser. No. 374,801
Int. Cl. A01n *9/00*, *9/28*
U.S. Cl. 424—180 15 Claims

1. A method for the treatment of atherosclerosis in a mammal which comprises administering to said mammal an effective dose of a water soluble carotenoid.

3,853,994
DIPHENYL(3-DI ALKYLAMINOPROPYL)SILANES AS THERAPEUTICS

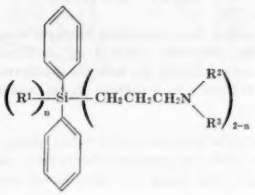
Sandor Barcza, West Orange, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Division of Ser. No. 206,509, Dec. 9, 1971, abandoned, which is a continuation-in-part of Ser. No. 881,324, Dec. 1, 1969, abandoned. This application June 18, 1973, Ser. No. 370,690

Int. Cl. A61u *27/00*

U.S. Cl. 424—184 **17 Claims**

1. A pharmaceutical composition in the form of a tablet or capsule comprising a pharmaceutically acceptable inert solid carrier and a hypertension or anxiety-relieving amount of a compound of the formula



where

n is 0 or 1,

each R^1 represents, independently, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkenyl of 1 to 4 carbon atoms or phenyl; and

each R^2 and R^3 represent, independently, alkyl of 1 to 4 carbon atoms, or a pharmaceutically acceptable lower alkyl quaternary ammonium or acid addition salt of said compound.

3,853,995
IMIDAZOLINE TRANQUILIZING AGENTS

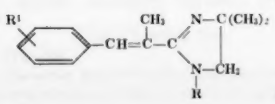
Herbert L. Wehrmeister, Terre Haute, Ind., assignor to Commercial Solvents Corporation, Terre Haute, Ind.

Division of Ser. No. 312,077, Dec. 4, 1972, Pat. No. 3,812,111. This application Dec. 13, 1973, Ser. No. 424,591

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **3 Claims**

1. A method of tranquilizing an animal comprising administrating thereto a tranquilizing amount of a compound corresponding to the formula



, or a pharmaceutically acceptable salt thereof, wherein R is isopropyl, phenyl, or hydroxyethyl and R^1 is hydrogen or chlorine.

3,853,996
PROCESS FOR ENHANCING A FRESH CHEESE FLAVOR IN FOODS

Willem Johan Begemann, Den Haag, and Pieter Daniel Harkes, Vlaardingen, both of Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Apr. 13, 1973, Ser. No. 351,044

Claims priority, application Netherlands, Apr. 14, 1972, 7217430

Int. Cl. A23l *1/26*

U.S. Cl. 426—65 **7 Claims**

1. A process for enhancing or imparting a fresh cheese flavour to a food-product in which an alpha-hydroxy monocarboxylic acid of the general formula R.CHOH.COOH, where R is a branched-chain C_2 to C_8 alkyl or a C_7 or C_8 phenylalkyl group, is added to the food-product to give between 50 and 2,000 mg/kg of the acid in the food-product.

3,853,997
TORTILLA AND PROCESS USING SORBIC ACID AND ITS SALTS

Manuel Jesus Rubio, Bridgeport, Conn., assignor to Roberto Gonzalez Barrera, Monterrey, N.L., Mexico

Filed July 24, 1970, Ser. No. 58,143

Int. Cl. A21d *13/00*

U.S. Cl. 426—151 **3 Claims**

1. A tortilla consisting of nixtamalized corn or nixtamalized corn flour, an additive consisting of **0.05** to **0.5%** of a compound of the class consisting of sorbic acid and its edible water soluble salts, and an additive of the class consisting of **0.1** to **0.8%** of low molecular weight fatty acids having from **1** to **4** carbon atoms in the carbon chain, their anhydrides, their edible water soluble salts, and the edible water soluble diacetates.

3,853,998
TORTILLA AND PROCESS USING METHYL, ETHYL, BUTYL, AND PROPYL ESTERS OF PARA-HYDROXYBENZOIC ACID

Manuel Jesus Rubio, Bridgeport, Conn., assignor to Roberto Gonzalez Barrera, Monterrey, N.L., Mexico

Filed July 24, 1970, Ser. No. 58,144

Int. Cl. A21d *13/00*

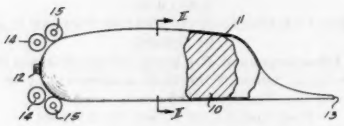
U.S. Cl. 426—151 **3 Claims**

1. A tortilla consisting of nixtamalized corn or nixtamalized corn flour and a plurality of the methyl, ethyl, butyl and propyl esters of para-hydroxybenzoic acid each in the concentration of 0.03 to 0.4%.

3,853,999
PROCESS FOR SHAPING COMMINUTED MEAT PRODUCTS

William E. Kentor, Highland Park, Ill., assignor to Servbest Foods, Inc., Highland Park, Ill.

Filed Dec. 6, 1972, Ser. No. 312,659
Int. Cl. A22c *18/00*
U.S. Cl. 426—105 3 Claims



1. A method for shaping a comminuted meat product which comprises stuffing comminuted meat into the closed end of an initially cylindrical casing having one closed end and an open end, said casing being composed of relatively flexible non-stretchable material, said casing being less than completely filled by the stuffed material, applying a rolling pressure about the stuffed meat on opposite sides of said casing to shape the periphery of the stuffed meat into a shape including at least two parallel flat sides and force excess meat toward said open end, closing the open end of the casing after such shaping and thereafter heating the meat within the casing until a meat temperature of at least 120°F. is reached.

3,854,000
BACTERICIDAL 3-HALO-5-ALKYL-Δ -THIADIAZOLIN--ONE

Gustave K. Kohn, Berkeley, and Malcolm S. Singer, Richmond, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 232,961, March 8, 1972, Pat. No. 3,763,176. This application July 16, 1973, Ser. No. 379,540
Int. Cl. A01n *9/12*
U.S. Cl. 424—270 6 Claims

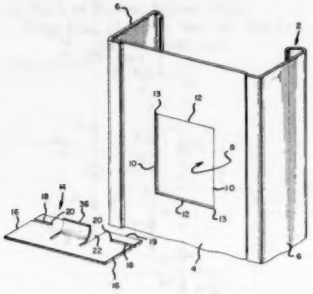
1. A composition for controlling bacteria which comprises a bactericidally effective amount of a 3-halo-5-alkyl-Δ^2-thiadiazolin-4-one, wherein the halogen is chlorine or bromine and the alkyl is from 1 to 4 carbon atoms, and a biologically inert carrier.

ELECTRICAL

3,854,001
CABLE GUIDE AND RETAINER

Frank Peter Dola, Port Richey, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 9, 1973, Ser. No. 358,573
Int. Cl. H02g *3/26*
U.S. Cl. 174—48 **3 Claims**



1. A cable guide and retainer member which is adapted to be mounted in a rectangular opening in a sheet metal member such as a sheet metal stud, said guide and retainer member comprising:

a rectangular plate-like member of insulating material having a width between two opposite first sides which is substantially greater than the width of said rectangular opening and less than the diagonal dimension of said rectangular opening,

a slot extending into each of said two opposite first sides of said guide and retainer member, said slots being in alignment with each other, the distance between the inner ends of said slots being substantially equal to, and slightly less than, said width of said rectangular opening, and

a notch in one side of said member, said one side being between said two first sides, said notch having a root portion which extends alongside said one side, and an integral tongue extending from said root portion arcuately with respect to the plane of said retainer member whereby,

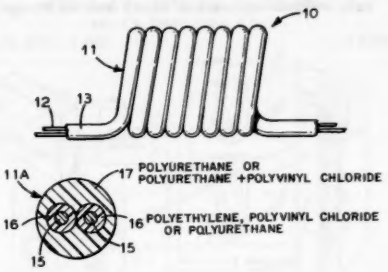
upon locating said guide and retainer member in said opening with the plane thereof extending substantially normally of said sheet metal member and with said retainer member oriented diagonally in said opening, and upon rotating said retainer member about a medial axis extending in its own plane and through said notch, two opposite edges of said opening will move relatively into said slots, and said retainer member will be mounted between said two edges and extend normally of the plane of said sheet metal member and a cable extending through said notch will be retained against said sheet metal member with said tongue bearing against said cable.

3,854,002
EXTENSIBLE HELICALLY COILED ELECTRICAL LEADS

Fritz O. Glander, Isernhagen; Horst Rager, Nurnberg, and Bernd Eilhardt, Vinnhorst, all of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hanover, Germany

Filed Dec. 21, 1970, Ser. No. 99,742
Claims priority, application Germany, Dec. 23, 1969, 1964339
Int. Cl. H01b *7/06*
U.S. Cl. 174—69 **1 Claim**

1. An extensible, helically coiled electrical lead comprising at least one conductor of large cross section and heavy current carrying capacity and an elastomeric covering for said conductor whereby the convolutions of said helically coiled lead

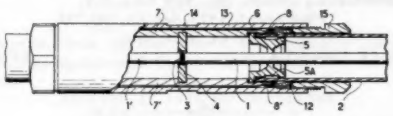


are restored to their normal condition after extension of said lead, said elastomeric covering compising polyurethane and a minor proportion by weight of polyvinyl chloride.

3,854,003
ELECTRICAL CONNECTION FOR AERATED INSULATION COAXIAL CABLES

Jean Duret, Lyon, France, assignor to Les Cables De Lyon, Lyon Cedex, France

Filed Feb. 20, 1974, Ser. No. 444,066
Claims priority, application France, Feb. 26, 1973, 73.6732
Int. Cl. H02g *15/08*
U.S. Cl. 174—88 C **6 Claims**



1. In a device connecting together the external conductors of two sections of disk-insulated coaxial cables whose inner conductors are also connected, said device including two metallic half-shells arranged between the ends of said external conductors, a sleeve covering said half-shells and being internally threaded at its ends, and a nut fitted onto each of said conductors and screwed onto the ends of said sleeve clamping the device to the external conductors, the improvement comprising: an insulating end member fitted into each of the external conductors, and receiving the central conductor and having a flange abutting the end of the external conductor and wherein the two half-shells each have an internal groove which receives the flange of a respective end member, a ring having a tapered internal surface facing the ends of said half-shell, the ends of said half-shells being chamfered on their outer surfaces and provided with longitudinal slots, wherein the two nuts are screwed into the internal threads of the sleeve and clamping, by means of the rings, the ends of the half-shells onto the conductor.

3,854,004
INFORMATION STORAGE AND RETRIEVAL SYSTEM

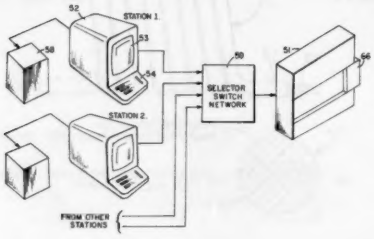
Irwin D. Baumel, Jericho; Nathan A. Moerman, Roslyn Heights, Long Island, and Attilio A. De Meo, Brooklyn, all of N.Y., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed May 20, 1968, Ser. No. 730,246
Int. Cl. G11b *1/02, 23/02*
U.S. Cl. 178—6 **2 Claims**

1. An information storage and retrieval system, comprising a central file,

a plurality of information bearing records stored in said file, a record viewing station,

means responsive to a signal identifying one of said records for transporting said viewing station to a position adjacent to said one record and for frictionally grasping and partially withdrawing said one record from its storage location in said file to a position at which information on said one record is exposed to view,



said means including a pair of fingers between which said record is grasped and by means of which withdrawal is initiated, and

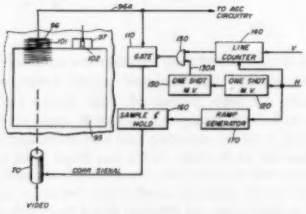
means for reading information from said one record while in its aforesaid position.

3,854,005

FILM STABILIZING SYSTEM FOR ELECTRON BEAM RECORDER

Robert A. Castrignano, Stamford, Conn., assignor to Columbia Broadcasting Systems, Inc., New York, N.Y.

Filed Apr. 2, 1973, Ser. No. 346,723
Int. Cl. H04n *5/84*
U.S. Cl. 178—6.7 A **9 Claims**



1. In an electron beam recording system which includes a film transport for moving a film past the scanning window; an electron sensitive plate means positioned adjacent said window; and means for scanning a modulated electron beam in a repetitive scanline pattern over a reference position which includes said plate and said window, the rate of said scanning being synchronized with the motion of the film, the plate means having an output which is the function of the intensity of the beam that is incident on an active area thereof; an improved subsystem for stabilizing the position of said beam with respect to said film, comprising:

interrupt means located at a prescribed position on said plate for causing an interruption signal in the output of said plate means when said electron beam is scanned over said prescribed position;

means for comparing the timing of said interrupt signal to the timing of individual scanlines and for generating a correction signal which reflects the comparison; and

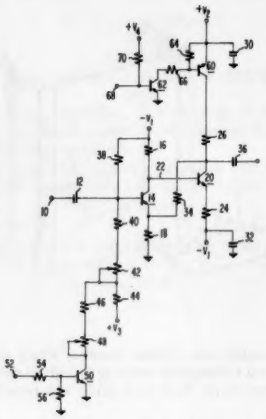
means for varying the reference position of said scanline pattern in accordance with said correction signal.

3,854,006

SWITCHABLE VIDEO AMPLIFIER

Denis Peter Dorsey, Levittown, Pa.; William E. Rodda, Trenton, and Kenneth Bruce Bahrs, Bricktown, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 23, 1973, Ser. No. 408,304
Int. Cl. H04n *5/68, 7/12*
U.S. Cl. 178—6.8 **5 Claims**



1. In a television image transmission system of the type wherein a single storage device is controllably biased to "write," "read" and "erase" modes of operation both for the selection of a particular frame of television information for transmission to a remote receiver location by an audio communications link and for the reception and re-creation of frame information so transmitted, and in which there is included:

an amplifier stage having an input terminal to which image representative television information is supplied and an output terminal at which amplified versions of said image representative information is developed for application to said storage device for the selection or re-creation of said information dependent upon when said device is operating within said system in the transmitting or receiving mode;

first means for biasing said amplifier stage to develop amplified image representative signals of a first magnitude at its output terminal referenced to a first direct current level; second means for biasing said amplifier stage to develop amplified image representative signals of a second, different magnitude at its output terminal referenced to a second, different direct current level;

and first control means coupled to said first and second biasing means for conditioning at least one of said biasing means to operation to set the magnitude of developed amplified signals and the direct current level to which said amplified signals are referenced;

said first control means also being dependent upon the mode of operation of said storage device within said television image transmission system to establish Class A amplifier operation and said first signal magnitude and direct current level as a reference when said storage device is employed to select a particular television frame for transmission and to establish Class B amplifier operation and said second signal magnitude and direct current level as a reference when said storage device is employed to re-create a television frame received along said audio communications link;

the combination therewith of:

second control means coupled to said amplifier stage for

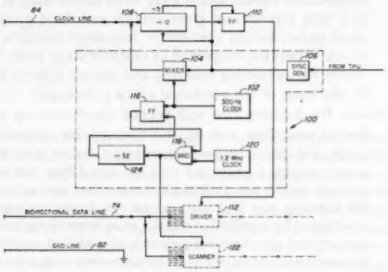
applying energizing potentials thereto substantially only when said storage device is biased to its "write" mode of operation, and to thereby reduce the quiescent power dissipated within said stage during the "read" and "erase" modes of operation of said device.

3,854,007

CONTROL SYSTEM BIDIRECTIONAL INTERFACE

Terence J. Hatton, Natick, Mass., assignor to The National Shawmut Bank of Boston, Boston, Mass.

Filed May 21, 1973, Ser. No. 362,519
Int. Cl. H04l *5/14*
U.S. Cl. 178—58 R **3 Claims**



1. A control system for transferring items of information over data lines between remote terminals and a receiving device comprising:

a first register in each said terminal for accumulating an item of information to be transferred to said receiving device;

clock means including a clock pulse generator for producing transfer pulses occurring at a first rate, a synchronizing generator for producing synchronizing pulses at a lower rate, and mixer means, responsive to both generators for producing a recurring series of timing pulses including a synchronizing pulse and a number of transfer pulses;

first driver means, responsive to said first register, for delivering said items to a said data line for transfer to said receiving device;

a second register in each said terminal for accumulating an item of information received from said receiving device on a said data line;

first gating means for enabling said first driver means to deliver an item of information from said first register to said receiving device over a said data line in response to a first group of said transfer pulses and for enabling said second register to receive an item of information from said receiving device over a said data line in response to a second group of said transfer pulses;

second driver means in said receiving device for delivering an item of information on a said data line to a said terminal;

scanner means in said receiving device for receiving an item of information from each data line of each terminal in sequence; and

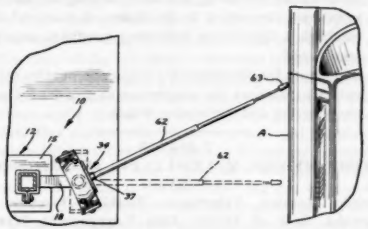
second gating means, responsive to said first group of transfer pulses, for enabling said scanner means to receive items of information from a said terminal over a said data line and responsive to said second group of transfer pulses, for enabling said second driver means to deliver an item of information to a said terminal over a said data line.

3,854,008

SOUND CONDUCTING APPARATUS FOR DRIVE-IN THEATERS

Kevin G. Duling, and Craig W. Maser, both of Lincoln, Nebr., assignors to Arthur M. Gunderson, St. Cloud, Minn.

Filed Jan. 26, 1973, Ser. No. 326,871
Int. Cl. H04r *7/04, 23/00*
U.S. Cl. 179—1 DD **2 Claims**



1. A sound reproducing apparatus for a drive-in theater embodying the use of an automotive vehicle body as a diaphragm, having in combination

a sonic transducer,

means yieldably supporting said transducer remote from and independent of an automotive vehicle body,

an elongated adjustably extensible rod extending from said transducer engaging said automotive vehicle body,

said yieldable supporting means when deflected by said vehicle body resiliently urging said rod against said vehicle body, and

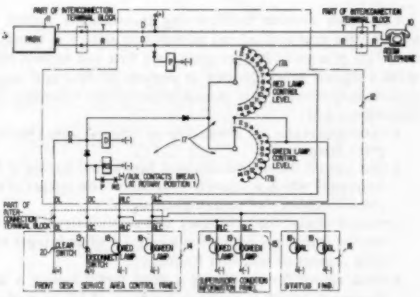
said rod transmitting vibrations from said transducer to said vehicle body producing sound.

3,854,009

AREA UNIT STATUS SYSTEM

Robert M. Pirnie, III, Montgomery, Ala., assignor to Communication Equipment & Contracting Co., Inc., Union Springs, Ala.

Filed Feb. 23, 1973, Ser. No. 334,980
Int. Cl. H04m *11/02*
U.S. Cl. 179—2 A **4 Claims**



1. For use with a plurality of dial telephones serving a plurality of service area units, which telephones are connectible to and disconnectible from a PABX with at least one telephone being in each service area unit; an area unit status system comprising:

a. a service area control means comprising a disconnect switch, a clear switch and visual status indicating lamps for each of the service area units;

b. at least one remote panel with corresponding status indicating lamps;

c. dial responsive means connected for actuation by dial pulses from said telephones when the telephones are disconnected from said PABX, and actuated upon energization;

d. means for disconnecting the telephones from the PABX and energizing the dial responsive means;
e. said means for disconnecting being operated under control of said disconnect switch;
f. lamp operating means selectively responsive to energization of the dial responsive means to establish a first lamp indicating condition among said lamps, and selectively responsive to the dialing of a first digit to establish a second lamp indicating condition among said lamps, and selectively responsive to the dialing of a second digit to establish a third lamp indicating condition among said lamps; and
g. said means for disconnecting being operated by said clear switch to connect the telephones to said PABX and deenergize the dial responsive means.

3,854,010
TIME DIVISION MULTIPLEXING TRANSMISSION SYSTEM

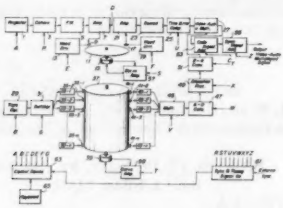
Takehiko Yoshino, Yokohama; Hisakichi Yamane; Eiichi Sawabe, both of Tokyo; Akio Yanagimachi, Kawasaki; Masaaki Eukuda, Tokyo; Tatsuo Kayano, Tokyo; Michio Masuda, Tokyo; Teruhiro Takezawa, Tokyo; Katsuo Mohri, and Hiroaki Nabeyama, both of Yokohama, all of Japan, assignors to Nippon Hoso Kyokai; Hitachi Limited and Hitachi Electronics, Ltd., all of Tokyo, Japan

Filed May 18, 1973, Ser. No. 361,581

Claims priority, application Japan, May 23, 1972, 47-50987; May 23, 1972, 47-50988

Int. Cl. H04j *3/06*

U.S. Cl. 179—15 BS **29 Claims**



1. A time division multiplexing transmission system for transmitting first and second information signals in turns at a time rate of a given integer ratio, said first and second information signals being divided at periods of first and second signals, respectively, said transmission system comprises at a transmitter end

a signal generator for producing an original signal having a given frequency;
a first circuit for producing said first signal having a first frequency which is equal to a fraction of an integer of said given frequency of said original signal;
a second circuit for producing said second signal having a second frequency which has a relation of an integer ratio with respect to said first frequency;
a third circuit for producing a third signal having a third frequency which is equal to fractions of integers of said first and second frequencies;
a fourth circuit for producing a fourth signal having a fourth frequency which is equal to a fraction of an integer of said third frequency;
a gate circuit for alternately passing said first and second signals at a time rate of said given integer ratio under a control of a gate signal formed by said fourth signal; and a digital synchronizing signal generator which is triggered by an output signal from said gate circuit and produces a digital synchronizing signal composed of a synchronizing information consisting of a pulse chain of a given repetition frequency and first and second control signals each consisting of a pulse chain, pulses of which pulse chain appear at given time slots in synchronism with occurrence instances of said first, second and third signals, said synchronizing information of the given repetition frequency being of the common waveform in both of said first and second signal periods, but said first control signal which is produced in said first signal period being different from said second control signal which is produced in said second signal period; whereby said synchronizing information and first control signal are inserted in said first information signal divided at said first signal period and said synchronizing information and second control signal are inserted in said second information signal divided at said second signal period, and said transmission system further comprises at a receiver end

means for extracting said pulse chain having the given repetition frequency from said synchronizing information of the common waveform inserted in said first and second information signals which have been transmitted in turns at a time rate of said given integer ratio and producing clock pulses having a repetition frequency which is equal to said repetition frequency of said extracted pulse chain; means for extracting said first and second control signals on the basis of the produced clock pulses; and

means for forming first and second synchronizing signals having said first and second frequencies, respectively, from said clock pulses, whereby said first and second synchronizing signals and said extracted first and second control signals are collated to each other and said means for forming said first and second synchronizing signals is controlled by a collation output so as to produce said first and second synchronizing signals of said first and second frequencies, respectively, in synchronism with a transmitted signal and said first and second information signals are reproduced by means of said first and second synchronizing signals.

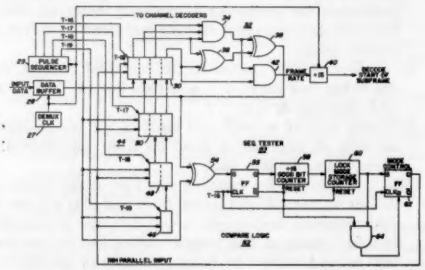
3,854,011
FRAME SYNCHRONIZATION SYSTEM FOR DIGITAL MULTIPLEXING SYSTEMS

Peter E. Mallory, New Smyrna Beach; Raehn Davis, Altamont Springs, and Richard S. Van de Houten, Maitland, all of Fla., assignors to General Dynamics Corporation, St. Louis, Mo.

Filed Sept. 24, 1973, Ser. No. 400,284

Int. Cl. H04j *3/06*

U.S. Cl. 179—15 BS **10 Claims**



1. A frame synchronizing system for a demultiplexer of a digital multiplexing system wherein a frame sync pattern is a pseudo-random (PN) sequence of bits, said system comprising

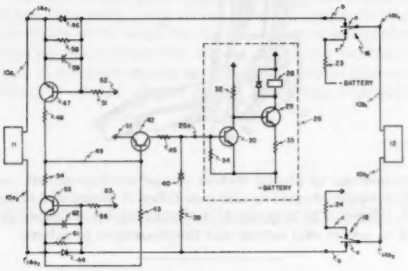
a. a PN sequence generator for generating a serial PN bit sequence as a function of input data to said demultiplexer,
b. means for storing successive pluralities of sequential bits of said input data,
c. means for sequentially comparing the bits of said input data with successive bits of said PN bit sequence from said generator,
d. means operative when said comparing means indicates the absence of identity between bits compared therein for conditioning said PN generator to generate said serial PN sequence as a function of said plurality of bits then stored in said storing means.

3,854,012

SWITCHING CIRCUIT FOR PREVENTING LOST CALLS

Charles W. Chambers, Jr., Amherst, Ohio, assignor to Lorain Products Corporation, Lorain, Ohio

Filed Apr. 23, 1973, Ser. No. 353,236
Int. Cl. H04m 3/42
U.S. Cl. 179—18 AD 10 Claims



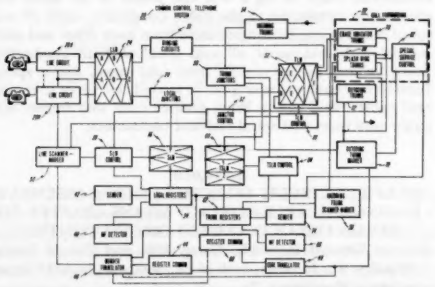
1. In a circuit for maintaining the connections between a telephone set and a PBX in the presence of an open circuit at the central office side of that PBX, the combination of first and second central office terminals, first and second PBX terminals, switching means having first and second operative states, said switching means being adapted to connect respective office and PBX terminals when said switching means is in a first operative state and to apply a predetermined voltage to said PBX terminals when said switching means is in a second operative state, means for connecting said switching means to said central office terminals, to said PBX terminals and to a source of voltage, means for establishing the second operative state of said switching means when the central office open circuits said first and second office terminals at a time when a telephone set is connected across said PBX terminals, and means for establishing the first operative state of said switching means under other voltage and current conditions at said PBX and central office terminals.

3,854,013

CALL FORWARDING ARRANGEMENT

Otto Altenburger, Rochester, N.Y.; Robert H. Bansemir, Northlake, Ill.; George R. Bergquist, Rochester, N.Y.; Donald J. Mariotti, Fairport, N.Y., and Gunter F. Neumeier, Rochester, N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Apr. 11, 1973, Ser. No. 350,301
Int. Cl. H04m 3/54
U.S. Cl. 179—18 BE 9 Claims



1. A call forwarding arrangement for automatically forwarding calls by a calling subscriber station originally directed to a forwarder subscriber station to a forwardee subscriber station, for use in a telephone system including a common control having a plurality of registers for connection to any of a plurality of subscriber stations for receiving dial pulses therefrom, said call forwarding arrangement comprising:

a memory for the random storage of equipment numbers of said forwarder and forwardee subscriber stations;

means for identifying any one of the plurality of registers having a call forwarding request or call forwarding erase codes dialed therein by a calling forwarder subscriber station connected to the register by the common control; message storage circuit means responsive to a call forwarding request code dialed in an identified register for receiving from the common control the identity and class of service of the forwarder subscriber station connected to the identified register, for receiving from the identified register the number of a forwardee subscriber station subsequently dialed into the register by the forwarder subscriber station, and for storing into said memory the forwarder subscriber identity and forwardee number;

memory erase circuit means responsive to a call forwarding erase code dialed in the identified register for receiving from the common control the identity and class of service of a forwarder subscriber station connected to an identified register for erasing from said memory the corresponding forwarder subscriber station identity and forwardee subscriber station number previously stored therein, and

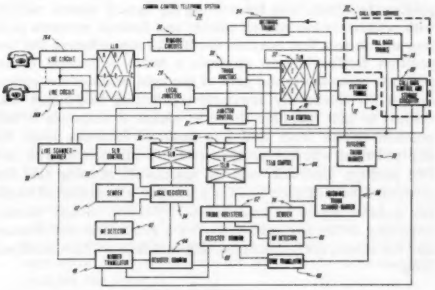
call diverter circuit means for identifying any one of the plurality of registers connected to a calling subscriber station by the common control and having the number dialed therein corresponding to a forwarder subscriber station having its identity stored in said memory for changing the number in the identified register to the corresponding forwardee subscriber station number stored in said memory.

3,854,014

CALL BACK ARRANGEMENT

Robert J. Akin; Otto Altenburger, both of Rochester, N.Y., and Robert H. Bansemir, Northlake, Ill., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Apr. 13, 1973, Ser. No. 351,121
Int. Cl. H04m 3/48
U.S. Cl. 179—18 BG 19 Claims



1. A call back arrangement for common control telephone systems comprising:

means for determining when a connection between a calling station and a called station cannot be completed by the common control;

means co-operating with the common control and effective upon a determination that a connection cannot be completed for connecting the calling station to means for receiving a signal from the calling station requesting the call be automatically retried, said means for connecting being arranged to transfer the identities of said calling and called stations from the common control to storage in said means for receiving upon connection of said calling station to said means for receiving;

means for determining when the called station is free and seizing the called station without signalling the called station;

means responsive to the seizure of the called station for ringing the calling station, and

means, responsive to the answer of the calling station, for automatically completing the connection between the calling station and the called station and ringing the called station.

3,854,015

SERVO SYSTEM FOR READING FROM A DISC-SHAPED RECORD CARRIER CONTAINING SIGNALS CODED IN OPTICAL FORM

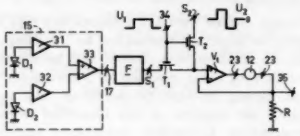
Peter Johannes Michiel Janssen, Emmasingel, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 26, 1973, Ser. No. 335,934

Claims priority, application Netherlands, Mar. 29, 1972, 7204205

Int. Cl. G11b *7/00*; **H04n** *5/84*

U.S. Cl. 179—100.3 V **12 Claims**



1. Apparatus for reading a disc-shaped record carrier of the type wherein video and/or audio signals are recorded in tangential tracks, the apparatus being of the type wherein an optical system directs a light beam from a light source to the record carrier, and images the information from the record carrier on a radiation detector means for converting the optical image into an electrical system, wherein position detector means for measuring the radial position of the optical system relative to a desired track provides position signals to a coarse position feedback loop for moving the optical system radially with respect to the record carrier and further provides position signals to a fine position feedback loop, wherein the fine position feedback loop controls a beam deflection means pivotally mounted in the path of the light beam of the optical system for selectively angularly redirecting said beam with respect to said radiation detector means in response to said position signals from said fine position feedback loop, the improvement wherein switching means are provided in said fine position feedback loop for selectively opening said fine position feedback loop and for providing a preselected auxiliary control signal to said beam deflection means thereby angularly deflecting said beam by a predetermined amount and for subsequently reconnecting said fine position feedback loop.

3,854,016

BI-DIRECTIONALLY ACTUATED SWITCH MECHANISM

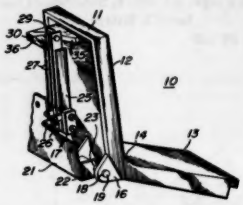
John N. Cook, Crystal Lake, and Charles L. Madalinski, Jr., Schaumburg, both of Ill., assignors to Motorola, Inc., Chicago, Ill.

Filed Aug. 13, 1973, Ser. No. 387,975

Int. Cl. H04r *1/02*; **H01h** *19/20*

U.S. Cl. 179—167 **8 Claims**

1. A switch mechanism including in combination; actuator means, pivot means secured to said actuator means, said actuator means being pivotal from a first position about said pivot means in one direction to a second position, and from said first position in the opposite direction to a third position, cam means including a V-shaped surface secured to said actuator means, cam follower means engaged on the notch side of said V-shaped surface of said cam means for relative movement there between and being deflected substantially



perpendicular to pivotal motion of said actuator means, and switch means coupled to said cam follower means and identically operative in response to said actuator means being pivoted to one of said second and third positions to actuate.

3,854,017

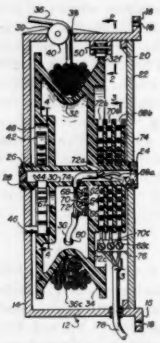
TELEPHONE AND ELECTRIC CORD REEL

Walter W. Crim, P.O. Box 1276, Pacifica, Calif. 94044

Filed Dec. 18, 1972, Ser. No. 316,108

Int. Cl. H02g *11/00*

U.S. Cl. 191—12.2 R **6 Claims**



1. In a reel for a conductive multistrand cable a base, a rotatable cable storing spool that revolves about an axis on said base in one direction to dispense the cable and an opposite direction to retract the cable, a plurality of spiral resilient conductors each having a first end joined to the spool and electrically connected to the cable conductor, each of said spiral resilient conductors separate from each other and each coaxial with said spool, all said spiral resilient conductors being located axially remote from said spool, and a spring fixed to said base and said spool to rewind said spool to retract said cables, said spring being remote from said frame, said cable, and from said spiral resilient conductors.

3,854,018

MULTIPLE CIRCUIT SELECTOR SWITCH ASSEMBLY HAVING MOVABLE CONTACT MEANS ADAPTED TO RETAIN ITSELF IN CLOSED CIRCUIT POSITION

Charles Edward Reynolds, Camp Hill, and Harold Oakley Woolley, Jr., Hershey, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

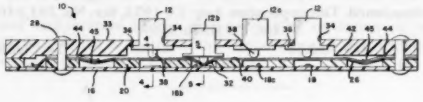
Filed June 14, 1973, Ser. No. 370,096

Int. Cl. H01h *13/74*, *15/02*

U.S. Cl. 200—5 A **14 Claims**

1. A switch assembly comprising a contact board having a plurality of electrical contacts positioned thereon, an aper-

tured grate operatively connected to said contact board adjacent said electrical contacts and having a plurality of apertures formed therein respectively associated with each of said electrical contacts to expose said contacts through the grate, and a resilient electrically conductive contact strip having opposite end portions respectively operatively connected to opposite ends of said grate at predetermined points of connection on the side of said grate opposite said contact board, said contact strip being cross-curved about its longitudinal axis, transversely of its width; the distance between said predetermined points of connection on said grate being less than the length of said contact strip between said points of connection whereby a portion of said strip is flexed into a projection



extending towards and entering one of the apertures in said grate to engage the contact member associated with said one aperture; said cross-curved contact strip being flattened across its width at said projection by the flexing of the strip thereby holding the strip in said one aperture until the strip is urged through another aperture in said grate, causing said projection to occur at said another aperture and relieving the projection and flattening of the strip at said one aperture; and means for maintaining one portion of said contact strip in electrical connection with an electrical conductor at all times, whereby said strip operates to provide an electrical connection between said conductor and a selected one of said contacts at substantially all times, in accordance with the selected location of said projection.

3,854,019

ELECTRIC COMPRESSED-GAS CIRCUIT BREAKER

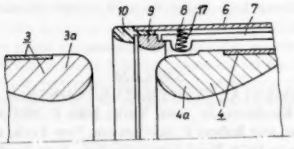
Siegfried Handke, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 5, 1973, Ser. No. 348,276

Claims priority, application Germany, Apr. 25, 1972, 2220897

Int. Cl. H01h *33/80*

U.S. Cl. 200—148 R **6 Claims**



1. A contact arrangement for an electric compressed-gas circuit breaker equipped with gas-blast means for blasting a stream of gas through the arc drawn when the breaker opens; the contact arrangement comprising: two stationary contact pieces; a switching unit movable between closed and open positions for electrically bridging said contact pieces in the closed position and for electrically disconnecting said contact pieces in the open position whereby the arc develops when said switching unit is moved to the open position; said switching unit including a supporting body, electrical insulation disposed at said supporting body and made of elastic, yielding material, a slide-contact ring carried by said supporting body and slideably contacting one of said contact pieces in the closed position, said slide-contact ring being made of arc-resistant material and being tension-fixed in said electrical insulation, said insulation being disposed between said supporting body and said ring thereby insulating said ring from said body, said slide-contact ring being configured at least in part as a body of carbon material, a plurality of elongated contact elements disposed in said supporting body for electrically connecting said contact pieces when said switching unit is in the closed position, and spring means for spring loading said contact elements to displace the same into electrically conductive contact with said slide-contact ring as said ring and said contact elements separate from said one contact piece when said switching unit moves into the open position.

3,854,020

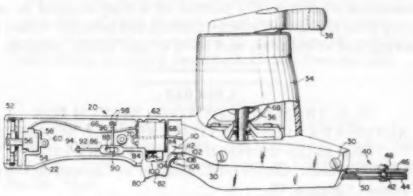
TRIGGER MECHANISM FOR HAND-OPERATED POWER DEVICE INCLUDING STATIONARY LOCKING DEVICE WHICH PROVIDES LOCK-OFF AND LOCK-ON OPERATION

Richard Warmath Glover, Joppa; Gordon Frederick Musch, Fork, both of Md., and John A. Summa, Anaheim, Calif., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed June 29, 1973, Ser. No. 375,081

Int. Cl. H01h *9/20*

U.S. Cl. 200—321 **13 Claims**



1. A trigger mechanism for a hand-operated power device including a motor and a control operatively associated with the motor, comprising:

a manually operable trigger movable from an inoperative level to an operative level to actuate the control and operate the motor, said trigger being manually movable in its inoperative level from a lock-off position to an unlock position wherein it is movable to its operative level to actuate the control and manually movable in its operative level to a lock-on position to continuously actuate the control;

a stationary locking device including a lock-off portion cooperatively engageable with said trigger in its lock-off position to prevent movement of said trigger from its inoperative level to its operative level and a lock-on portion cooperatively engageable with said trigger in its lock-on position to maintain said trigger in its operative level to continuously actuate the control and operate the motor;

means for normally biasing said trigger toward its inoperative level; and

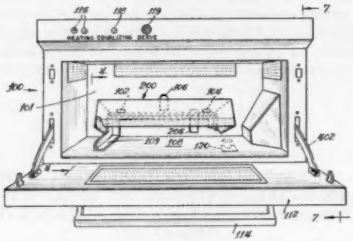
means for biasing said trigger to a position in which said trigger cooperates with said lock-off portion when said trigger is at its inoperative level, and in which said trigger is released from said lock-on portion when said trigger is at its operative level.

3,854,021

ELECTROMAGNETIC HEATING SYSTEM WHICH INCLUDES AN AUTOMATIC SHIELDING MECHANISM AND METHOD FOR ITS OPERATION

Donald G. Moore, Glencoe, Ill., and William E. Leyers, Louisville, Ky., assignors to Chemetron Corporation, Chicago, Ill.

Filed July 18, 1973, Ser. No. 380,188
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 37 Claims



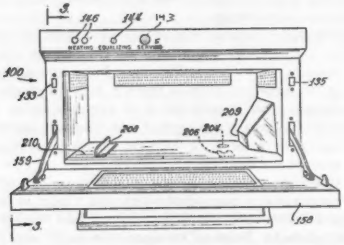
1. An electromagnetic oven system for heating materials carried on a tray comprising an oven cavity having electrically conductive walls and an open end for receiving trays inserted therein, a door to open and close said open end, means for directing microwave energy into said cavity, an electrically conductive shield mounted for movement in said cavity between an open tray receiving position and a closed position, means including said shield when in said closed position and cooperating with the bottom wall of said cavity to provide substantial shielding of a portion of a tray inserted in said cavity from microwave energy therein, and actuator means for moving said shield from said open to said closed position.

3,854,022

ELECTROMAGNETIC OVEN SYSTEM FOR AUTOMATICALLY HEATING VARIABLE NUMBERS AND SIZES OF FOOD ITEMS OR THE LIKE

Donald G. Moore, Glencoe, Ill., assignor to Chemetron Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 300,763, Oct. 25, 1972,. This application July 18, 1973, Ser. No. 380,187
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 42 Claims



1. A system for heating articles comprising:

a heating structure defining a cavity to which articles to be heated and electromagnetic energy for heating the articles are supplied;

a control unit located outside said cavity for controlling the application of electromagnetic energy thereto; and

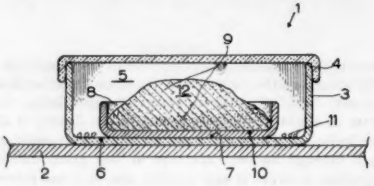
a removable sensor coupled to said control unit when positioned at a predetermined location in said cavity and capable of absorbing energy at a rate which is proportional to the rate at which an article to be heated increases in temperature, so that when an article to be heated reaches a predetermined temperature said control unit terminates the application of electromagnetic energy to said cavity.

3,854,023

MICROWAVE OVEN HEATING MEMBER

Melvin L. Levinson, 1 Meinzer St., Avenel, N.J. 07001

Continuation-in-part of Ser. No. 281,182, Aug. 16, 1972, abandoned, which is a continuation-in-part of Ser. No. 193,940, Oct. 29, 1971, Pat. No. 3,731,037, Continuation-in-part of Ser. No. 704,389, Feb. 9, 1968, Pat. No. 3,701,872, which is a continuation-in-part of Ser. No. 470,809, July 9, 1965, abandoned, which is a continuation-in-part of Ser. No. 483,144, Aug. 27, 1965, abandoned. This application Aug. 23, 1973, Ser. No. 391,146
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 14 Claims



1. For use in a microwave oven, an improved heating member comprising:

a microwave-reflective, heat-conductive body with at least one obverse surface which shields, from exposure to microwave energy, an adjacent portion of an article when located in contact thereon,

means to permit microwave energy to selectively heat an area of said article remote from said obverse surface when said article is located in said contact with said obverse surface,

a reverse surface of said microwave-reflective, heat-conductive body, complementary to said obverse surface, which shields, from exposure to microwave energy, liquid received in surface contact thereon,

a microwave-permeable, liquid-absorptive body disposed to absorb liquid from surface contact with at least a portion of said complementary reverse surface and transfer said liquid to a location exposed to microwave energy, and

where said heat conductive body is a heat exchanger to exchange the cold of said article when in said contact with said obverse surface for the heat evolved from vapor condensing to a liquid on said complementary reverse surface.

3,854,024

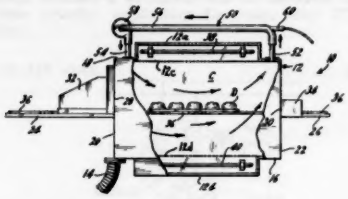
ENVIRONMENTAL TEMPERATURE CONTROL SYSTEM

Harold B. Kaufman, Jr., New York; John P. McCarthy, College Point, and Robert F. Schiffmann, New York, all of N.Y., assignors to DCA Food Industries Inc., New York, N.Y.

Filed Feb. 1, 1974, Ser. No. 438,951
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 8 Claims

1. In a microwave system, an enclosure defining a microwave cavity having heating means mounted therein, means defining an air-sampling zone external to said microwave cavity, means including microwave traps for connecting said air-sampling zone to said microwave cavity, means for drawing air from said microwave cavity into said air-sampling zone and returning air to said microwave cavity, a thermostatic control operatively connected to a power source and in controlling relation to said heating means and including a temperature sensor in said air-sampling zone operable to sense the

temperature of the air passing through said air-sampling zone without being effected by the microwave energy in said microwave cavity, and said thermostatic control being responsive to



said temperature sensor and controlling operation of said heating means to maintain the temperature of the air in said microwave cavity at a desired level.

3,854,025

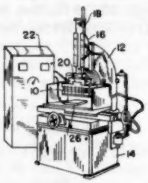
METHOD AND APPARATUS FOR ELECTRICAL MACHINING OF METAL

Thomas J. O'Connor, 100 Morgan Rd., Ann Arbor, Mich. 48106

Continuation-in-part of Ser. No. 253,906, May 16, 1972, abandoned, which is a division of Ser. No. 545,652, April 27, 1966, Pat. No. 3,663,786. This application May 16, 1973, Ser. No. 360,829

Int. Cl. B23k *9/16*

U.S. Cl. 219—69 M **8 Claims**



1. The method comprising the steps of mounting a model electrode member having the dimensions of a workpiece to be formed from a master die member to be formed from the model electrode member in parallel relation to a die workpiece member, operating upon the die workpiece member with the model electrode member to form a cavity in the die workpiece member and in conjunction with such operation applying oscillatory rotary motion to one of said model electrode and die workpiece members so as to oscillate the same in its own plane to produce a master die member having a cavity which is oversize relative to said model electrode member by an amount equal to the total amplitude of the rotary motion and providing an abrasive surface on said master die member.

3,854,026

GATES TIMING SYSTEM FOR ELECTRICAL DISCHARGE MACHINING

Oliver A. Bell, Jr., Mooresville, and Randall C. Gilleland, Statesville, both of N.C., assignors to Colt Industries Operating Corp., New York, N.Y.

Continuation-in-part of Ser. No. 373,377, June 25, 1973,. This application Aug. 24, 1973, Ser. No. 391,504

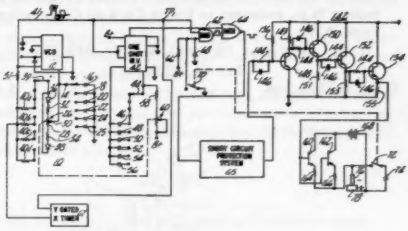
Int. Cl. B23k *9/16*

U.S. Cl. 219—69 C **20 Claims**

1. An apparatus for providing electrical discharge machining of a conductive workpiece by passing machining power pulses across a dielectric coolant filled gap, including a multivibrator having its output operatively connected to an electronic output switch for operating it with predetermined on-off time to provide machining power pulses across the gap, wherein the improvement comprises:

a gated timer system operably connected to said multivibrator for providing machining by spaced groups of pulses, said groups having interposed therebetween single pulses, comprising:

a counter operatively connected to the output of said multivibrator and presettable to pass a predetermined number of pulses;



a first flip-flop stage operatively connected to the output of said counter for providing a signal responsive to the passage of the last of said predetermined number of pulses;

turn-off means responsive to said signal for providing a turn-off pulse to said multivibrator for holding it off for a time period intermediate said group of pulses;

a second flip-flop for allowing passage of a single next following pulse from said multivibrator and initiating a second like off time period of said multivibrator; and

means operatively connected to said turn-off means for selectively adjusting the length of said time periods.

3,854,027

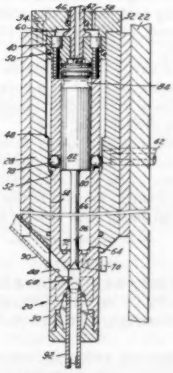
PERCUSSIVE STUD WELDING SYSTEM

Donald H. Ettinger, Royal Oak, and Nicholas G. Zorka, Sterling Hts., both of Mich., assignors to USM Corporation, Boston, Mass.

Filed Sept. 13, 1972, Ser. No. 288,743

Int. Cl. B23k *9/20*

U.S. Cl. 219—98 **10 Claims**



1. In a percussive stud welding system including stud supply means for delivering successive studs to a welding tool to be welded to a structural member, a welding tool comprising a body, collet means on the body for holding a stud in welding position, stud delivery passage means in said body establishing

communication between said stud supply means and said collet means, reciprocable plunger means shiftable within said delivery passage means to transfer a stud to said collet means and retain it thereat in said welding position, releasable locking means for rigidly locking said plunger against relative motion with respect to said body when in said stud retaining position, and means coupled to said locking means for actuating the same.

3,854,028

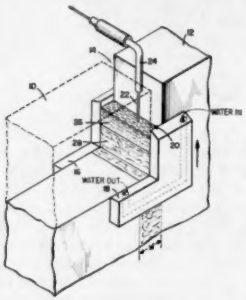
HIGH SPEED VERTICAL ELECTRO-SLAG WELDING

Gerald D. Uttrachi, Westfield, and Daniel Christian, Wayne, both of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed Sept. 18, 1973, Ser. No. 398,304

Int. Cl. B23k *9/18*

U.S. Cl. 219—126 **5 Claims**



1. A method of welding workpieces, having thicknesses of between 3/8 to 2 inches, in a substantially vertical direction, under a blanket of a molten conductive slag, at high speed, comprising the steps of:

a. forming a substantially vertical joint between the edges of the workpieces to be welded;

b. surrounding said joint at a predetermined starting location with means to form a cavity;

c. depositing a granular flux into said cavity;

d. submerging the end of a consumable filler wire electrode beneath the surface of said deposit of granular flux;

e. initially establishing an electric arc under said deposite of flux for forming said molten slag within said cavity;

f. passing a current of above about 500 amperes through said electrode;

g. advancing said cavity forming means vertically upstream from said starting location at a speed of between 3–10 inches per minute while continuously feeding said electrode into said molten slag; and

h. controllably cooling said cavity forming means so as to form a substantially discontinuous solidified slag cover upon the surface of the solidified weld metal which represents no more than 35 percent of the total solidified weld surface area per linear foot of weld length.

3,854,029

METHOD AND APPARATUS FOR REPAIRING SHEET ELEMENTS OF AUTOMOBILES BODIES

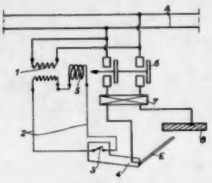
Theodore Robert Fenollar, 12 Cours du Medoc, 33300 Bordeaux, France

Filed Dec. 10, 1973, Ser. No. 423,244

Int. Cl. A05b *3/00*; B21j *1/06*

U.S. Cl. 219—149 **3 Claims**

1. A method of repairing sheet elements of automobile bodies, which have been hammered into shape, to smoothen such elements, said method comprising effecting instantaneous electrical heating of the sheet element in a sufficiently local region thereof to prevent deformation of the sheet, and alternating the heating of the sheet element with cooling, said heating being effected by connecting the sheet element to a first electrode of a high-intensity electrical circuit, supporting a second electrode of said circuit by a portable operator-



carried element, and moving said portable element so that the second electrode is brought into and maintained in direct contact with said sheet element to effect localized heating of said sheet element at the location where it is contacted by said second electrode.

3,854,030

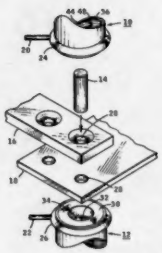
DIFFUSION BOND RIVETING SYSTEM

Cleveland E. Roye, Spring Valley, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Filed Sept. 27, 1973, Ser. No. 401,526

Int. Cl. B21j *5/08*; H05b *1/00*; B23k *9/16*

U.S. Cl. 219—150 **6 Claims**



1. A diffusion riveting device which comprises:

Means to support a rivet in a hole through a material to be riveted;

enclosing means surrounding said rivet and hole;

means to maintain an inert atmosphere within said enclosing means;

first heating means adapted to be positioned in contact with a rivet supported in said hole to heat said rivet to a diffusion bonding temperature;

second heating means adapted to be positioned in contact with material adjacent to said hole and spaced from a rivet supported in said hole to heat said material adjacent to said hole to a diffusion bonding temperature; and

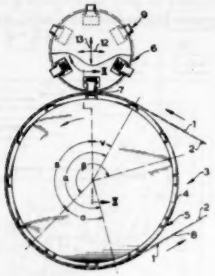
pressure means to squeeze the end of said rivet toward each other to expand the body of said rivet into diffusion bonding contact with the wall of said hole and to reshape the ends of said rivets into the desired rivet head shape.

3,854,031

WELDING APPARATUS

Josef Keller, Lengerich, Germany, assignor to Windmoller & Holscher, Lengerich of Westphalia, Germany

Filed May 23, 1973, Ser. No. 362,907
Claims priority, application Germany, May 27, 1972, 2225931
Int. Cl. H05b 1/00
U.S. Cl. 219—244 8 Claims



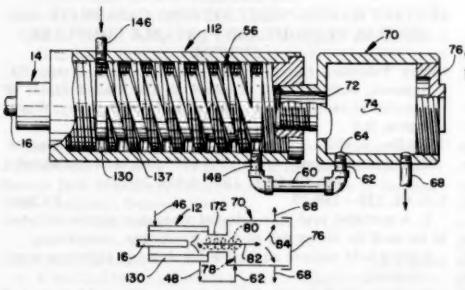
1. Apparatus for fusing a plurality of superposed continuously fed plastics films or the like to one another by means of transverse weld seams, comprising a rotary welding cylinder about which the films are partially slung, a plurality of welding bars carried by the welding cylinder at its periphery, a backing cylinder mounted on a rotary shaft for exerting pressure on the superposed films, a plurality of pressure bars provided on the backing cylinder at a pitch corresponding to that of the welding bars, and means for rotating the backing cylinder at the same peripheral speed as the welding cylinder, the rotary shaft of the backing cylinder being adjustable in position along an arc concentric with the welding cylinder.

3,854,032

SUPERHEATED ELECTRIC ARC STEAM GENERATOR

Jerry D. Cooper, 3020 W. 4th St., Odessa, Tex. 79761

Filed Dec. 26, 1973, Ser. No. 427,700
Int. Cl. H05b 7/18
U.S. Cl. 219—383 5 Claims



1. Steam generation apparatus comprising a longitudinally extending metal arc chamber having opposed ends, a closure means in the form of an electrode holder at one end thereof; an electrode supportingly received by said electrode holder and having a marginal end portion thereof extending into the space enclosed by said arc chamber; means electrically insulating said electrode from said arc chamber;

an annular water jacket concentrically formed about said arc chamber, a water inlet and a steam outlet spaced from one another and connected in fluid flow relationship to said water jacket;

electric circuit means including an electric source of energy for causing an arc to occur between said electrode and the interior wall surface of said arc chamber, to thereby generate heat which is removed by water which may be circulating through the water jacket;

a steam chamber having opposed ends spaced from one another, a closure means at one end of said steam chamber, the remaining end of said steam chamber being sealed to and in open communication with the remaining end of said arc chamber;

said steam chamber having a steam inlet port and a steam outlet port, conduit means flow connecting said steam inlet port to said steam outlet;

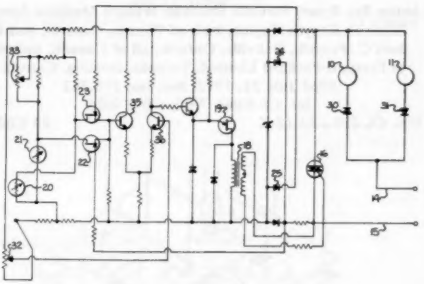
so that water flows into said water inlet, changes into steam and flows through said inlet port into said steam chamber where the steam is superheated and flows through said steam outlet port.

3,854,033

TIME SHARED CONTROL ARRANGEMENT FOR ELECTRICAL HEATERS AND METHOD

Harlan R. Edge, 227 Edgewood Dr., Greenville, S.C. 29605

Filed Apr. 17, 1972, Ser. No. 244,363
Int. Cl. H05b 1/02
U.S. Cl. 219—483 18 Claims



1. An arrangement for independently operating at least two electrical heaters while sharing a controller means and comprising:

alternating current electrical power controller means for selectively modifying at least one characteristic of electrical current flowing therethrough and thereby for controlling the average power delivered,

a plurality of electrical heaters,

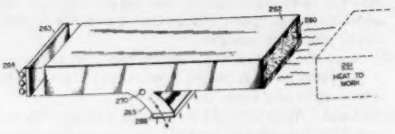
independent temperature sensor means operatively associated with each of said electrical heaters for independently sensing the temperatures of the corresponding ones of said heaters,

means operatively interconnected with said controller means, said electrical heaters and said sensor means for sensing the cyclic alternations of the electrical current flowing through said controller means, means for delivering successive cyclic portions of the electrical current through said controller means to successive ones of said electrical heaters and means for effecting response of said controller means independently during each successive cyclic portion to the one of said independent temperature sensor means corresponding to the one electrical heater to which the one cyclic portion is delivered so as to independently control the temperature thereof.

3,854,034
SYSTEMS INCORPORATING APPARATUS AND METHODS FOR SIMULATING TIMED RELATED TEMPERATURES

Frank W. Leitner, and Bobby B. Childress, both of Charlotte, N.C., assignors to Coltron Industries, Inc., Charlotte, N.C.

Division of Ser. No. 779,778, Nov. 29, 1968, Pat. No. 3,586,830. This application June 9, 1971, Ser. No. 151,562
Int. Cl. H05b *1/02*
U.S. Cl. 219—494 **12 Claims**

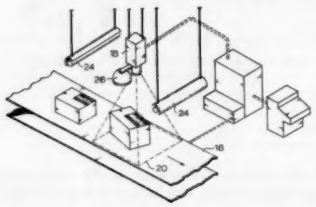


1. A thermal system comprising a primary heat flow path from a heat source to a load; a secondary heat flow path from the primary heat flow path extending in a direction away from the primary heat flow path; sensing means responsive to heat in the secondary path at a given position; and heat flow control means having predetermined heat flow characteristics in the secondary path between the primary path and said given position.

3,854,035
METHOD AND MEANS FOR READING CODED INFORMATION

Anton Roy Tyler, Toronto, Ontario; William Matthew Lower; Maurice Kenyon Taylor, both of Weston, Ontario, and Robert C. Forsyth, Oakville, Ontario, all of Canada, assignors to Ferranti-Packard Limited, Toronto, Ontario, Canada

Filed July 31, 1972, Ser. No. 276,362
Int. Cl. G06k *7/00;* **G08c** *9/06*
U.S. Cl. 235—61.11 E **24 Claims**



22. Means for using a television camera to extract information encoded on a surface by the provision of areas of predetermined dimension designed to contrast, in the illumination provided for such surface for viewing by said camera, with the background on said surface, comprising in combination:

a television camera arranged to scan a field of view including the locus of said information,

means for sampling and discriminating as to the level of the video output of said camera at predetermined intervals during the scanning of a line and providing a signal of one of two values dependent upon whether the sampled signal is above or below a predetermined level, where said level is selected to discriminate between the signal resulting from said areas and the signal resulting from said background,

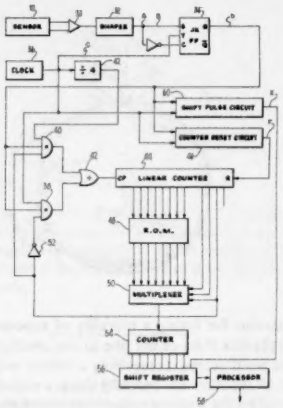
where said determination is made at regular intervals along a scanned line, short relative to the dimension in the scanning direction of said areas,

means for analyzing the signals resulting from the presence and location of said areas.

3,854,036
TAG READER TO DIGITAL PROCESSOR INTERFACE CIRCUIT

Gokal C. Gupta, Fremont, and John M. Hunt, Hillsborough, both of Calif., assignors to The Singer Company, New York, N.Y.

Filed Feb. 27, 1974, Ser. No. 446,580
Int. Cl. G11b *5/09*
U.S. Cl. 235—61.11 E **7 Claims**



1. Circuitry for determining the values of binary signal pulses serially introduced to the circuitry at varying speeds and pulse widths, said circuitry comprising:

input means for receiving the binary signal pulses;

counting means coupled to said input means for generating a count signal representing the width of each one of said pulses;

converting means coupled to said counting means and responsive to said count signal for generating a number representing the logarithm of said count signal; and

comparison means coupled to said converting means for comparing the logarithmic number generated for each binary signal pulse with the number generated for a neighboring binary signal pulse of known value.

3,854,037
SEXTANT HAVING NIGHT VIEWING CAPABILITY AND DIGITAL READOUT AND PORTABLE COMPUTER SYSTEM

Sidney Feldman, Silver Spring, and Harry C. Ketts, III, Aquasco, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 4, 1972, Ser. No. 312,066The portion of the term of this patent subsequent to Aug. 14, 1990, has been disclaimed.
Int. Cl. G01c *1/08;* **G02b** *23/12*
U.S. Cl. 235—150.27 **1 Claim**

1. A portable, real-time celestial navigation system adapted to be used for either day or night navigation, comprising:

a hand-held sextant adaptable for day and night use comprising

an electronic light enhancing telescope removably mounted on said sextant for viewing the night horizon,

a horizon mirror affixed to said sextant in optical alignment with said telescope,

a tiltable index mirror rotatably mounted on the line-of-sight of said sextant,

a gear train connected to said index mirror for changing the angle of tilt,

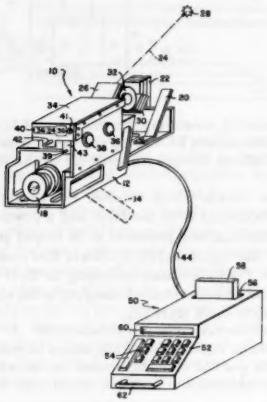
manual coarse and fine adjustment means coupled to said gear train for affecting the tilt of said index mirror,

a shaft encoder mechanically coupled to said gear train for producing an electrical output representing the altitude of a celestial body, said electrical output being controlled by means of a push-button on said sextant,

a handgrip movably attached at the center of gravity of said sextant; and

a portable computer for solving the trignometric equations of celestial navigation, said computer being coupled to said sextant and adapted to accept said electrical output, said computer containing

means for reading ephemeral data of celestial bodies into said computer, said reading means comprising a first



reader having a magnetic head for reading data stored on magnetic tape and a second reader for reading data from punched cards,

a manual input means comprising a keyboard having manually depressable key operatively connected to said computer,

a clock providing an automatic output of time and data to said computer, said clock input being controlled by said push-button control on said sextant,

memory means for input data, and

readout means comprising an erasable digital display and a removable printed record for displaying the solution of the celestral navigation equations.

3,854,038

METHOD AND APPARATUS FOR COMPENSATING FLUID FLOW FOR A VARIABLE PHYSICAL CONDITION

Ronnie Jack McKinley, Longview, Tex., assignor to Halliburton Company, Duncan, Okla.

Filed Aug. 27, 1973, Ser. No. 391,770

Int. Cl. G01f *1/08, 15/02*

U.S. Cl. 235—151.34 **28 Claims**

1. A method for compensating a manifestation of fluid flow for a variable physical condition of the fluid comprising the steps of:

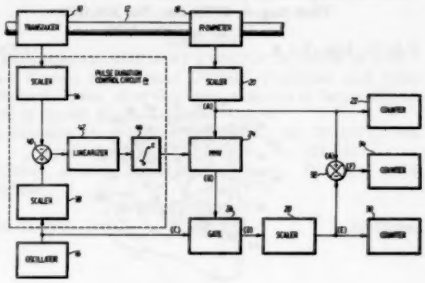
a. providing a first signal having a frequency related to gross fluid flow;

b. providing a second signal having a frequency related to a variable physical condition of the fluid;

c. providing a third signal having a predetermined fixed frequency;

d. providing a d.c. control signal in response to the second and third signals; and,

e. gating the third signal in response to the first signal and the d.c. control signal to thereby provide an output signal



related to fluid flow compensated for the variable physical condition of the fluid.

3,854,039

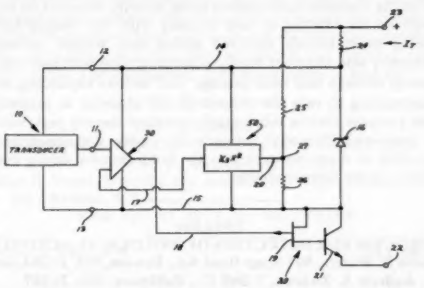
CURRENT TRANSMITTER CIRCUITRY TO PROVIDE AN OUTPUT VARYING AS THE SQUARE ROOT OF A MEASURED VARIABLE CONDITION

Leonardo V. Serrano, Minneapolis, Minn., assignor to Rosemont Inc., Eden Prairie, Minn.

Filed Apr. 30, 1973, Ser. No. 355,816

Int. Cl. G06g *7/20*

U.S. Cl. 235—193.5 **23 Claims**



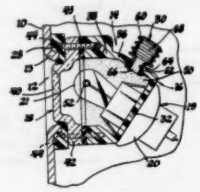
1. A two wire current transmitter having first and second terminals for connection to a power source and to deliver a current signal proportional to the square root of a parameter including first means to provide an input signal which varies as a function of the parameter, a current control circuit providing a variable output current signal in response to a control signal, a squaring circuit having input means providing a first current signal which is a function of said variable output current signal and including second means providing a second signal proportional to the square of said first current signal, a comparison amplifier having an input coupled to the first means and second means and having an output providing a control signal which is a function of the input signal and the second signal, and means connecting the output of said comparison amplifier to provide said control signal to said control circuit and means connected to said first means, said control circuit, said squaring circuit and said comparison amplifier, respectively, to provide power therefore solely through said first and second terminals.

3,854,040

MOTOR VEHICLE LAMP ASSEMBLY

Fred G. Heiderer, Grand Blanc, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 6, 1973, Ser. No. 386,009
Int. Cl. B60q 1/00, 3/00
U.S. Cl. 240—7.1 R 1 Claim



1. A motor vehicle lamp assembly comprising: a lamp housing adapted to be mounted on the motor vehicle, said housing including wall means terminating with a peripheral flange mating with peripheral rim of said housing and covering said opening; a gasket between the flange and the rim; fastener means securing said lens to said housing to compressively retain the gasket between the flange and the rim to define a sealed lamp cavity containing air at substantially atmospheric pressure; first and second openings in said wall means of said housing; a lamp member carried on said housng and projecting through said first opening into said lamp cavity, said lamp member including a filament adapted to be connected to an electrical source, said filament when energized directing illumination outwardly through said lens and heating and pressurizing the contained air in said lamp cavity; and an accordion pleated bellows having an expandable chamber and a tubular flanged base with an axial passage communicating with the chamber, said bellows being directly mounted on said wall means exterior of said housing with the flanged base being press fittedly received within said second opening whereby said chamber fluidly communicating with said lamp cavity through said axial passage, said bellows expanding and contracting to vary the volume of said chamber to maintain the pressure therein substantially constant thereby preventing a pressure differential between the cavity and atmosphere tending to draw moisture into the lamp interior during cool down of the lamp assembly.

3,854,041

PROCESS FOR DETECTION OF BIOLOGICAL ACTIVITY

John R. Waters, 801 Stags Head Rd., Towson, Md. 21204, and Andrew A. Zwarun, 7 Dell Ct., Baltimore, Md. 21207

Continuation-in-part of Ser. No. 353,952, April 24, 1973,. This application Dec. 3, 1973, Ser. No. 421,354
Int. Cl. G01t 1/00; C12k 1/10
U.S. Cl. 250—303 8 Claims

1. In the process of detecting biological activity in blood wherein:

a. a growth medium including a C^{14} containing carbon source which is fermentable to produce carbon dioxide is inoculated with a blood sample;

b. the inoculated sample is exposed to conditions conducive to the occurrence of normal metabolic processes for a period of time sufficient to cause production of carbon dioxide by the fermenting of said source; and

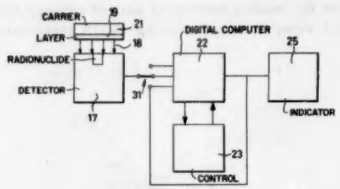
c. at least a portion of the gaseous atmosphere from said fermentation is measured for radioactivity to determine the presence of $C^{14}O_2$, the improvement comprising incorporating into the medium at least about 5 percent by weight of a compound selected from the group consisting of sucrose, raffinose and glycylglycine whereby the background noise for the measurement of radioactivity of gaseous $C^{14}O_2$ is reduced.

3,854,042

DEVICE FOR MEASURING THE THICKNESS OF LAYERS WITH A RADIONUCLIDE IRRADIATING THE LAYER

Albert Ott, Am Weinberg 22, 6201 Auringen b/Wiesbaden, Germany

Filed May 10, 1973, Ser. No. 359,010
Int. Cl. G01n 23/00
U.S. Cl. 250—308 1 Claim



1. Device for measuring the thickness of layers comprising radionuclide means irradiating the layer, which radionuclide means produces energy proportional to the thickness of the layer,

detector means which receives the backscatter radiation backscattered from the layer and a possibly present carrier material and produces at its output end a pulse rate, X, in the region between a lower first count, corresponding to the backscatter belonging to layer thickness zero, X_o, and an upper count belonging to the region of a quasi-infinitely thick layer, X_s,

series connected indicator means, and

controllable digital computing means between the detector means and the indicator means for allowing for the non-linear relationship between count rate and layer thickness,

said digital computing means comprising:

means for inputing a dimensionless constant, a, associated with the radionuclide being used and the particular combination of layer and carrier materials being measured,

means for inputing a length-effected, one dimensional, constant, c, associated with the radionuclide being used and the particular combination of layer and carrier materials being measured,

means for normalizing the output count from said detector means comprising means for dividing the difference between said detected count and said lower first count corresponding to layer thickness zero by the difference between said upper count corresponding to a quasi-infinitely thick layer and said lower first count, and

means for linearizing said normalized count, X_n, in accordance with the following function, in which Y is the thickness of the layer to be measured:

$$X_n = 1 - \frac{1 + \frac{aX_s}{X_s - X_o}}{\exp\,(Y/c) + \frac{aX_s}{X_s - X_o}}$$

3,854,043

X-RAY COLOR ELECTROPHOTOGRAPHY

Masahiro Hukase; Makoto Tomono, and Sigeru, all of Tokyo Inowa, JA, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 130,820, April 2, 1971, abandoned. This application Feb. 16, 1973, Ser. No. 333,151
Claims priority, application Japan, Apr. 7, 1970, 45-29052
Int. Cl. G01n 23/04
U.S. Cl. 250—315 7 Claims

1. A method of producing a multi-color X-ray electrophotograph comprising:

charging a photoconductive layer of an X-ray sensitive plate comprising a base and the photoconductive layer,

exposing the charged photoconductive layer to X-rays which have passed through an object to be electrophotographed such that an electrostatic latent image is formed on said photoconductive layer, said image having regions of reduced charge density in accordance with the concentration of exposing X-rays,

injecting a first color developer powder onto the surface of said photoconductive layer, said first powder having an electrical charge of sign opposite to that of the photoconductive layer,

applying an electrical force to said first powder, said force having a magnitude less than the magnitude of the force

which the regions of maximum potential exert on said first powder whereby said first powder is deposited only on those regions of said photoconductive layer which exert a force greater than the applied force,

injecting a second differently colored developer powder onto the surface of said layer, said second powder having a charge of the same sign as said first developer powder, adjusting the magnitude of said applied force to a magnitude lower than the magnitude of the force exerted on said second powder by the region on the photoconductive layer having the next highest potential such that said second powder is deposited on all regions of said photoconductive layer which exerts a greater force on said second powder than said adjusted applied force.

3,854,044

METHOD AND APPARATUS FOR MEASURING A TRANSMISSION SPECTRUM OF A FILM

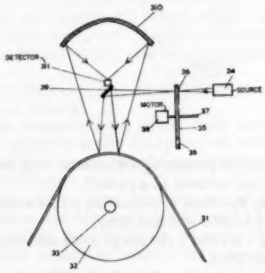
Bernard John Stay, St. Albans, and Harry Arthur Willis, Welwyn Garden City, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 12, 1973, Ser. No. 339,767

Claims priority, application Great Britain, Mar. 14, 1972, 11767/72

Int. Cl. G01j *3/00*

U.S. Cl. 250—338 **15 Claims**



1. A method for measuring a transmission spectrum of a film having a thickness which is of a similar order of magnitude to the wavelengths of the radiation used in the measurement, which method comprises directing the radiation onto the film thereby dividing the radiation into a transmitted beam and a returned beam, each beam individually having interference fringes caused by internal reflection within the film, and measuring at said wavelengths the total intensity of at least substantially equal portions of both of said beams, so as to mutually cancel the intensity variations with wavelength due to the interference fringes of the individual beams.

3,854,045

MEASURING THE DUST CONCENTRATION IN AIR

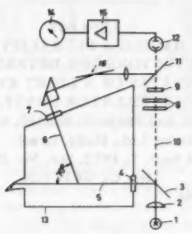
Hans Breuer, Essen; Josef Gebhart, Frankfurt, and Klaus Robock, Essen, all of Germany, assignors to Bergwerksverband GmbH, Essen, Germany

Continuation-in-part of Ser. No. 190,944, Oct. 20, 1971,. This application Jan. 31, 1973, Ser. No. 328,347

Claims priority, application Germany, Oct. 21, 1970, 2051546

Int. Cl. G01t *1/16*

U.S. Cl. 250—341 **20 Claims**



1. A method for measuring the dust concentration in dust-containing air, comprising, in combination, the steps of illuminating said dust-containing air with a beam of light having a wavelength between **800** nm and **2,000** nm and travelling in a predetermined direction; detecting light which is forwardly scattered by the dust particles at an angle between **60°** and **80°** to said predetermined direction; and measuring the intensity of the so-scattered light, said so-measured intensity constituting a measure of said dust concentration of dust having a grain size within a predetermined continuous range in said air.

3,854,046

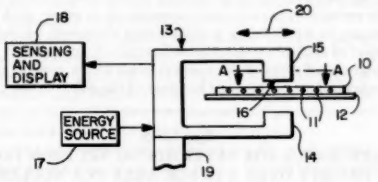
SCANNING HEAD FOR INSPECTING MATERIAL HAVING PARALLEL STRANDS

Guy B. Wood, Waverly, Pa., assignor to Weston Instruments, Inc., Newark, N.J.

Filed Apr. 11, 1973, Ser. No. 350,189

Int. Cl. G01n *23/20*

U.S. Cl. 250—358 **4 Claims**



1. In an apparatus for examining the arrangement of a plurality of strands in a body of material, the material being of type having a substantially homogeneous average transmissivity and the strands therein being of substantially constant width and spacing, the apparatus being of the type having a source of radiation to which the material is at least partially transparent, a radiation detector responsive to the radiation to produce a signal representative of the level of received radiation, means for supporting the source and the detector on

opposite sides of a portion of the material and in alignment with each other so that radiation passing through the material is received by the detector, and means for producing relative motion between the source and detector assembly and the material so that various portions of the material can be examined, the improvement comprising

means disposed between said source and said detector for limiting the area of exposure of the detector to radiation received from the source through the material,

said means including means defining a radiation transparent aperture having a dimension in a direction transverse to the strands with is equal to the width of an integral number N of strands plus the width of the same integral number N of spaces between strands,

the aperture being in the shape of a parallelogram with the sides defining said dimension being parallel to said strands.

3,854,047

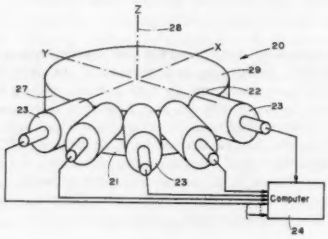
DETECTOR HAVING A PLURALITY OF PAIRS OF PHOTO-DETECTORS FOR DETERMINING THE COORDINATES OF A LIGHT EVENT IN A SCINTILLATOR CRYSTAL

Avraham Suhami, and Benjamin Sabbah, both of Haifa, Israel, assignors to Elscint Ltd., Haifa, Israel

Filed Sept. 7, 1972, Ser. No. 286,986

Int. Cl. G01t *1/20*

U.S. Cl. 250—366 **10 Claims**



1. A detector responsive to incident radiation stimuli comprising: a scintillator crystal responsive to an event therein caused by radiation stimulus for emitting a light pulse; the crystal being defined by a peripheral edge surface whose generatrix is parallel to the central axis of the crystal, and a pair of parallel polished and non-coated faces perpendicular to the axis; and a plurality of pairs of photo-detectors each of which has a photo-sensitive surface positioned adjacent different segments of the edge surface of the crystal for receiving light emitted by the crystal in response to an event, each photo detector of a pair being in diametrical alignment whereby the output of each photodetector is functionally dependent on the planar coordinates of the event relative to the central axis but is independent of the axial location of the event in the crystal.

3,854,048

APPARATUS FOR DETERMINING NEUTRON FLOW DENSITY OVER A LARGE AREA IN A NUCLEAR REACTOR

Ernst-Georg Runge, and Erich Klar, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

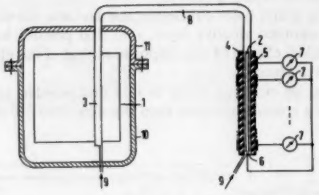
Filed Mar. 1, 1973, Ser. No. 337,175

Claims priority, application Germany, Mar. 10, 1972, 2211757

Int. Cl. G01t *3/00*

U.S. Cl. 250—390 **3 Claims**

1. An apparatus for determining the neutron flow density in a nuclear reactor core and having emitter and collector electrodes insulated from each other and between which measurable current is produced by beta radiation; wherein the improvement comprises one of said electrodes being elongated to extend over a large area of said core and the other of said



electrodes being in the form of a plurality of mutually separated sections interspaced along the length of said elongated electrode and cable conductors each individually connected to an individual one of said separated sections.

3,854,049

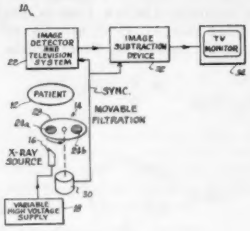
COMPENSATION FOR PATIENT THICKNESS VARIATIONS IN DIFFERENTIAL X-RAY TRANSMISSION IMAGING

Charles A. Mistretta, and Frederick Kelcz, both of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Dec. 10, 1973, Ser. No. 423,115

Int. Cl. G03b *41/16*

U.S. Cl. 250—402 **30 Claims**



1. A method of producing differential x-ray images to visualize a contrast material in a patient,

comprising the steps of producing a first x-ray image using an x-ray source and first filter,

producing a second x-ray image using said x-ray source and a second filter,

said filters producing substantially different x-ray spectra,

producing a differential image corresponding to the difference between said first and second x-ray images,

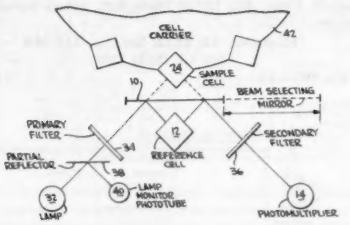
said contrast material being visualized in said differential image,

and adjusting the voltage of said x-ray source as in inverse function of the average patient thickness to minimize the effect of variations in patient thickness upon said differential image.

3,854,050
HIGH PRECISION FLUOROMETER FOR MEASURING ENZYMATIC SUBSTRATES IN TISSUE

John Ivan Peterson, Falls Church, Va.; Walter S. Friauf, Bethesda, Md., and Stephen B. Leighton, Maplewood, N.J., assignors to The United States of America as represented by the Assistant Secretary, Health and Scientific Affairs, Department of Health, Education and Welfare, Washington, D.C.

Filed Sept. 11, 1973, Ser. No. 396,224
Int. Cl. G01t 1/20
U.S. Cl. 250—429 4 Claims



1. A high precision fluorometer for biochemical measurements comprising:

A. a source of a beam of radiant energy;

B. cell means for holding a sample to be measured, said sample being of a type exhibiting an initial level of fluorescence when irradiated by said radiant energy;

c. means for dispensing a reagent into said sample cell means to thereby change the fluorescence level of said sample relative to said initial level;

D. reference cell means;

E. said sample cell means and said reference cell means having at least two adjacent faces at right angles to each other, said beam entering through one of said adjacent faces and fluorescence energy exiting through the other of said adjacent faces;

F. photomultiplier means for converting fluorescent energy into electrical signals;

G. a movably mounted mirror means for selectively directing said beam at said sample cell means or said reference cell means, whereby said sample or said reference, respectively, will be excited by said radiant energy to fluorescence, and simultaneously directing fluorescent energy from said sample cell means or said reference cell means, respectively, toward said photomultiplier means;

H. means for converting said electrical signals to digital signals;

I. means for integrating said digital signals over a predetermined time interval;

J. means for comparing the signals from said sample cell with the signals from said reference cell, thereby producing the ratio of sample to reference intensity;

K. print-out means;

L. rotatable carrier means for a plurality of sample cells, said carrier means being a circular metal block containing channel means for circulation of water at a constant temperature to thereby control the temperature of said cells;

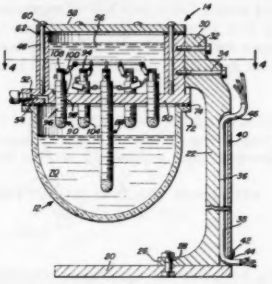
M. means for rotating said carrier means to position individual cells for dispensing said reagents thereinto and excitation by said beam; and

N. control means for selectively rotating said carrier means and directing said beams and activating said means for integrating said digital signals, comparing said sample and reference signals, and printing out the desired information.

3,854,051
GLOW DISCHARGE SOLUTION TREATMENT APPARATUS

William L. Hudson, 11804 E. 67th St., Kansas City, Mo. 64133

Filed May 14, 1973, Ser. No. 360,546
Int. Cl. C22d 7/08; B01k 1/00
U.S. Cl. 250—546 15 Claims



1. Apparatus for treating material by glow discharge, comprising a housing, a reaction vessel separate from the housing enclosing the material being treated, means for supporting the housing, means for removably securing the reaction vessel to the housing to seal the material within the reaction vessel, anode means mounted in the housing and projecting into the reaction vessel above the material therein, cathode means mounted in the housing and extending therefrom into the material within the reaction vessel, electrical circuit means connected to the anode and cathode means and mounted internally within the housing for activating treatment of the material within the reaction vessel, and means connected to the housing for controlling and monitoring conditions exclusively within the reaction vessel.

3,854,052
METHOD OF AND APPARATUS FOR DIMENSIONALLY INSPECTING AN ARTICLE WITH A PAIR OF RADIANT ENERGY BEAMS

Madhu P. Asar, Columbus, and Harry L. Maddox, Reynoldsburg, both of Ohio, assignors to Western Electric Company Incorporated, New York, N.Y.

Filed Jan. 2, 1974, Ser. No. 430,003
Int. Cl. G01b 11/08; G01n 21/30
U.S. Cl. 250—560 23 Claims

1. In a method of ascertaining a relationship between a linear dimension of a first member with respect to a known linear dimension of a second member:

scanning the first member with a first detector along the linear dimension thereof;

initiating the generation of a first pulse train at a first frequency upon the first detector passing over the origin of, and until the first detector passes over the termination of, the linear dimension of the first member;

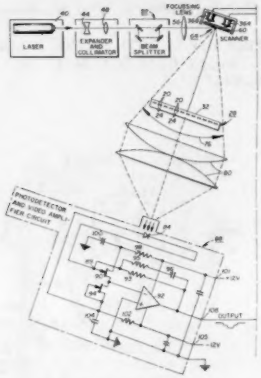
counting and storing the pulses of the first pulse train;

scanning the second member with a second detector along the known linear dimension thereof;

initiating the generation of a second pulse train at a second frequency upon the second detector passing over the origin of, and until the second detector passes over the termination of, the known linear dimension of the second member, the second frequency being at a value to generate a pulse train having a pulse count equal to the pulse count of the first pulse train when the ratio of the linear dimension of the first member to the known linear dimension of the second member is equal to a known constant;

applying the pulses of the second pulse train to sequen-

tially subtract the stored pulse count of the first pulse train, and



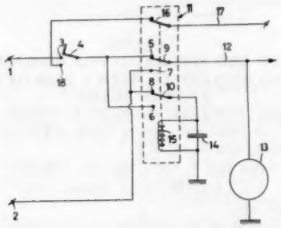
generating an indication signal upon retention of a stored count of the first pulse train which is indicative of a ratio of the linear dimension of the first member to the known linear dimension of the second member that is not equal to the known constant.

3,854,053

ELECTRIC POWER FEED CIRCUIT FOR UTILIZING DEVICES INSTALLED ON MOTOR VEHICLES

Giampaolo Garcea, Milan, and Aldo Volontieri, Monza, both of Italy, assignors to Alfa Romeo S.p.A., Milan, Italy

Filed Dec. 29, 1972, Ser. No. 319,793
Claims priority, application Italy, Jan. 10, 1972, 19184/72
Int. Cl. F02n *11/08*
U.S. Cl. 290—38 **9 Claims**



1. An electric power feeding circuit for utilizing devices such as fuel feed pump installed on a motor vehicle powered by an internal combustion engine, comprising in combination:

a storage battery;

a generator;

key switch means being selectively operated in an inactive position, a first active position and a second active position;

switching means being shiftable between a first position and a second position for connecting alternatively the utilizing devices to the battery or to the generator, said switching means connecting the utilizing devices to the battery when said switching means is in the first position and said key switch means is switched from the inactive position to the first active position for actuating the utilizing devices before the engine of the motor vehicle is started and before the generator consequently begins to deliver its electric power, said key switch means being subsequently switched temporarily to the second active position for starting the engine and thus activating the generator, said switching means connecting the utilizing devices to the generator when said switching means is in the second position and said key switch means is operated in the first active position; and

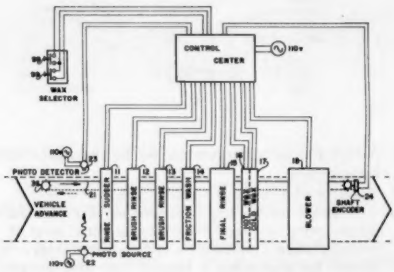
means responsive to the operating conditions of the generator for shifting said switching means from the first position to the second position when the generator is actuated, thereby providing automatic deactuation of the utilizing devices when the engine is stopped spontaneously and thus preventing discharge of the storage battery and suppressing of any fire hazards.

3,854,054

CAR WASH CONTROL APPARATUS

Robert O. Conn, Jr., 15520 Quito Rd., Monte Sereno, Calif. 95030

Filed Dec. 18, 1972, Ser. No. 316,300
Int. Cl. H02j *1/00*
U.S. Cl. 307—41 **12 Claims**



1. A control apparatus for a car wash having a vehicle conveyor for transporting a vehicle to be washed to a plurality of stations in a car wash line equipped with electrically controlled car wash devices comprising:

means sensing a vehicle entering the line and having a plurality of electrical outputs representing units of length of said line and being serially energized with the movement of said vehicle, said energized outputs continuously imaging the vehicle and its movement over the length of said line;

a plurality of electrical switches one adapted for connection to each of said devices; and

electrically energized means for activating said switches and being connected to said outputs to energize at least one of said devices in advance of the vehicle entering the station associated with said one device and for deenergizing said one device following the vehicle leaving said last named station whereby said one device will be energized for a period longer than the duration of passage of the vehicle through said last named station.

3,854,055

STATE AND SEQUENCE DETECTOR

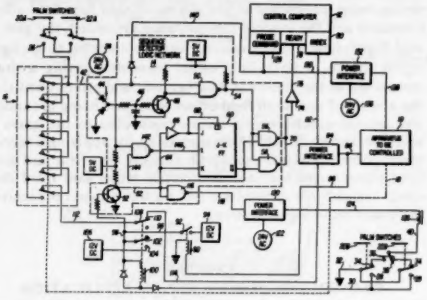
James E. Sparks, Riverside, Calif., assignor to Bourns, Inc., Riverside, Calif.

Filed Nov. 29, 1973, Ser. No. 420,239
Int. Cl. H01h *19/14*
U.S. Cl. 307—115 **11 Claims**

1. In a relative state and sequence detector system which includes an apparatus to be controlled, said apparatus designed to undergo repeated operating cycles, and a control means coupled to said apparatus for applying sequential automatic control signals thereto for governing said operating cycles, wherein the improvement comprises the provision of: manually operable switch means coupled to said apparatus and to said control means for actuating said apparatus and for

governing the application of said automatic control signals to said apparatus, said manually operable switch means including means for opening and closing a plurality of circuits; and,

sequence detector logic means including a logic network coupled to said manually operable switch means and to said control means for stopping said apparatus from continuing said operating cycles unless said plurality of circuits are sequentially closed and opened by operation of said manually operable switch means in a predetermined manner, said sequence detector logic means enabling an uninterrupted application of said sequential automatic control signals to said apparatus in response to said plurality of circuits undergoing a change of state during the interval between a predetermined pair of said automatic control signals.

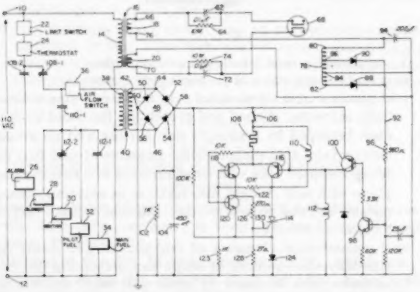


3,854,056

BURNER CONTROL SYSTEM

Phillip J. Cade, Winchester, Mass., assignor to Electronics Corporation of America, Cambridge, Mass.

Filed Nov. 9, 1973, Ser. No. 414,268
Int. Cl. H01h *35/00*
U.S. Cl. 307—117 **13 Claims**



1. Burner control apparatus for use with a fuel burner installation having a combustion chamber, means to apply a request for burner operation signal to the burner control apparatus, combustion chamber ignition and fuel supply means, and flame sensing means for sensing the presence of flame in the combustion chamber, comprising:

a burner lock-out switch and a lock-out switch actuator,

control means for said combustion chamber ignition and fuel supply means,

flame indication means responsive to said flame sensing means to produce a signal indicative of the flame condition in said combustion chamber,

first and second energizing circuits for said lock-out switch actuator, said first energizing circuit including a latchable switch means adapted when triggered to latch in a closed mode for the duration of a request for operation signal, said second energizing circuit including first and second switch means connected in series, said first switch means adapted to close and open respectively in response to the presence and absence of a request for operation signal, said second switch means adapted to close and open respectively in response to flame and no-flame indications from said flame indication means, and

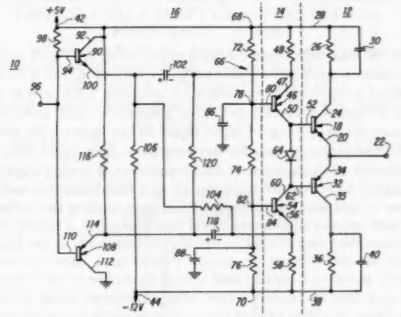
circuitry cross-coupling said latchable switch means with said first switch means, said circuitry including a trigger circuit responsive to said first switch means being closed to trigger said latchable switch means, and a feedback circuit responsive to said latchable switch means closing to reset said first switch means in an open mode.

3,854,057

HIGH SPEED IMPEDANCE SENSITIVE SWITCH DRIVER

Heyward Sturges Williams, Amherst, and Robert Robbins, Hudson, both of N.H., assignors to LRC Corporation, Hudson, N.H.

Filed Dec. 11, 1972, Ser. No. 314,114
Int. Cl. H03l *3/18*
U.S. Cl. 307—255 **4 Claims**



1. A high speed, impedance sensitive, amplifying switch driver comprising:

an input terminal for selectively receiving a first input signal of a first voltage accompanied by a high impedance state and a second input signal of a second voltage accompanied by a low impedance state;

an output terminal for presenting first and second high speed amplified switching signals corresponding to said input signals;

an output stage including first and second semiconductor means each having a first load electrode connected to said output terminal for alternately, selectively producing said first and second switching signals;

an intermediate switching stage including third and fourth semiconductor means each having a first load electrode connected in common to the control electrodes of said first and second semiconductor means, for alternately, selectively driving said first and second semiconductor means;

an input stage including means for alternately, selectively biasing one of said third and fourth semiconductor means in a low conduction state and the other in a high conduction state in response to said first and second input signals, said means for biasing including voltage divider means having a first tap connected to the control electrode of said third semiconductor means and a second tap connected with the control electrode of said fourth semiconductor means, and seventh semiconductor means having its control electrode connected to said input terminal and with said first tap and its first load electrode connected to said second tap, said control electrode of said seventh semiconductor means being connected to said first tap through a resistor and said second tap being

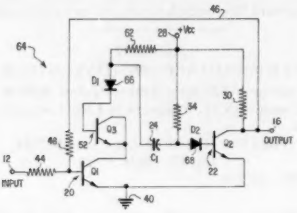
connected to said control electrode of said fourth semiconductor means through a capacitor.

3,854,058

TEMPERATURE STABLE ONE-SHOT MULTI-VIBRATOR

Dudley D. Nye, Jr.; Peter J. Carlson, and Arley Keith, Jr., all of Fort Lauderdale, Fla., assignors to Airpax Electronics Inc., Fort Lauderdale, Fla.

Filed Sept. 5, 1973, Ser. No. 394,410
Int. Cl. H03k *3/10*
U.S. Cl. 307—273 **15 Claims**



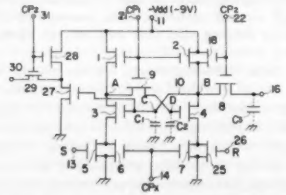
1. A one-shot multi-vibrator comprising first and second transistors each having an emitter, a collector, and a base, a pair of power supply terminals for coupling a DC power supply across the emitter-collector circuits of said transistors, means for supplying an input signal to the base of the first of said transistors, means for deriving an output signal from the collector of the second of said transistors, a timing capacitor coupled between the collector of said first transistor and the base of said second transistor, a resistor coupling the collector of said second transistor to said first transistor, a timing resistor coupling one of said power supply terminals to the base of said second transistor, means providing a semi-conductor diode junction coupling said timing capacitor to the collector of said first transistor, a first semi-conductor diode junction coupling one side of said timing capacitor to the base of said second transistor and second and third semiconductor diode junctions coupling the other side of said timing capacitor to the collector of said first transistor, and a fourth semiconductor diode junction coupling said one side of said timing capacitor to the collector of said second transistor.

3,854,059

FLIP-FLOP CIRCUIT

Kosei Nomiya, and Hiroto Kawagoe, both of Tokyo, Japan, assignors to Hitachi, Ltd. Tokyo, Japan

Filed Nov. 20, 1972, Ser. No. 307,786
Claims priority, application Japan, Nov. 19, 1971, 46-92416
Int. Cl. H03k *23/08, 23/30*
U.S. Cl. 307—304 **10 Claims**



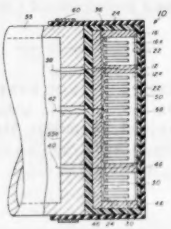
1. A flip-flop circuit comprising a first field effect transistor having a drain connected through first resistance means to a DC power source, a second field effect transistor having a drain connected through second resistance means to said DC power source, the gate of said first field effect transistor being connected to the drain of said second field effect transistor, a third field effect transistor, the gate of said second field effect transistor being connected to said drain of said first field effect transistor through said third field effect transistor, first synchronizing means connected to the gate of said third field effect transistor for applying a first clock pulse signal thereto which renders said third field effect transistor periodically conductive, fourth and fifth field effect transistors connected in parallel, the drains of said fourth and fifth field effect transistors being connected to the source of said first field effect transistor and the sources thereof being grounded, the gate of said fourth field effect transistor being connected to an input signal source, a sixth field effect transistor having a drain connected to the source of said second field effect transistor, the source of said sixth field effect transistor being grounded, and second synchronizing means connected to the gates of said fifth and sixth field effect transistors for applying a second clock pulse signal thereto which renders said fifth and sixth field effect transistors non-conductive when said third field effect transistor is conductive and an input signal is received from said input signal source.

3,854,060

TRANSDUCER FOR FM SONAR APPLICATION

Rufus L. Cook, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 12, 1973, Ser. No. 406,069
Int. Cl. H04r *17/00*
U.S. Cl. 310—9.6 **11 Claims**



1. An electroacoustic transducer comprising:
first and second pairs of piezoelectric elements;
said piezoelectric elements of said first pair being substantially semi-disc shaped and presenting flat front surfaces each bounded by a straight side surface and an arcuate side surface, said piezoelectric elements of said first pair being disposed with said front surfaces in a first common plane with said straight side surfaces in adjacent, spaced, parallel relation to one another and said arcuate surfaces lying in a circle;
said piezoelectric elements of said second pair being substantially semi-annular in shape and presenting flat front surfaces each bounded by inner and outer arcuate surfaces and straight end surfaces, said piezoelectric elements of said pair being disposed in concentric relation to said first pair with said front surfaces lying in said first common plane and said inner arcuate surfaces in uniformly spaced relation to said arcuate surfaces of said piezoelectric elements of said first pair, said straight end surfaces being in spaced parallel relation to one another; said piezoelectric elements of said first and second pairs being further characterized by flat rear surfaces lying in a second common plane;
front electrode means, on each of said front surfaces, for effecting electrical connection therewith;
rear electrode means, on said rear surfaces, for effecting electrical connection therewith; and
said piezoelectric elements each being further characterized by a plurality of intersecting slots formed in said rear

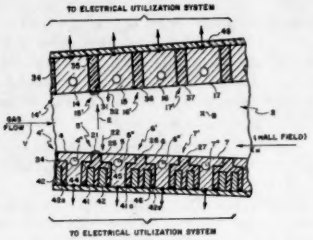
surfaces and defining a plurality of rearwardly extending posts on each of said piezoelectric elements.

3,854,061

MAGNETOHYDRODYNAMIC GENERATOR ARC RESISTANT ELECTRODES

Richard J. Rosa, Cambridge, Mass., assignor to AVCO Everett Research Laboratory, Inc., Everett, Mass.

Filed Feb. 21, 1974, Ser. No. 444,357
Int. Cl. H02k *45/00*
U.S. Cl. 310—11 **9 Claims**



1. In an MHD device having a duct for conveying an electrically conductive gas through a transverse magnetic field, said duct having opposed walls, electrode means comprising:

a. a first set of electrodes spaced one from another disposed along one of said opposed walls, each of said electrodes having a first end surface proximate said gas;

b. a second set of electrodes spaced one from another disposed along the other of said opposed walls, each of said electrodes having a second end surface proximate said gas;

c. means electrically interconnecting said first and second set of electrodes to effect current flow between said sets of electrodes through said gas, said current flow producing a Hall potential in the gas along the direction of gas flow and a potential difference between adjacent electrodes; and

d. arc splitting means comprising an arc splitting member disposed in the space between at least some adjacent electrodes of at least one of said sets of electrodes for increasing the voltage between said adjacent electrodes required to sustain an arc discharge therebetween.

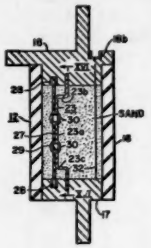
3,854,062

FUSIBLE MEANS FOR ROTATING ELECTRICAL DEVICE

Bernard B. Winer, Pittsburgh, and Richard J. Keady, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 31,841, April 30, 1970, , which is a continuation of Ser. No. 649,698, June 28, 1967, abandoned, and a continuation of Ser. No. 174,651, Aug. 25, 1971,. This application Mar. 5, 1973, Ser. No. 338,014
Int. Cl. H02k *11/00*
U.S. Cl. 310—68 C **2 Claims**

1. In combination, a rotating electrical device, a rotating fuse means, said rotating fuse means comprising one or more fuse assemblies (12), end terminal connectors (17, 18) disposed at the ends of each fuse assembly (12), each fuse assembly (12) comprising an insulating casing with an interiorly-disposed longitudinally-arranged insulating support-plate means (27) and a generally parallel-arranged fuse-link (23), means affixing said fuse-link (23) to the longitudinally-arranged insulating support-plate means (27), said support-plate means (27) being supported by said end terminal connectors (17, 18) for the rigid support thereof, means for in effect providing a common shaft carrying said rotating electrical device and said rotating fuse means, circuit means carried by said shaft for electrically connecting said electrical device and said rotatable fuse means together, means locating said



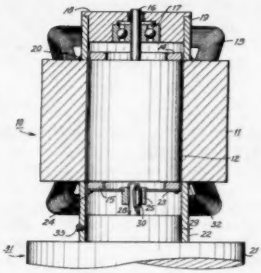
fuse casing and said support-plate means (27) in a radial direction with respect to said shaft, and indicating means for indicating operation of the rotating fuse means.

3,854,063

ELECTRIC MOTOR ADAPTED TO BE COUPLED DIRECTLY TO A SHAFT OF APPARATUS FOR PERFORMING WORK

Carl-Axel Leopold Bergman, Atvidaberg, Sweden, assignor to Aktiebolaget Overums Bruk, Overum, Sweden

Filed Jan. 9, 1974, Ser. No. 431,915
Claims priority, application Sweden, Jan. 10, 1973, 7300322
Int. Cl. H02k *7/14*
U.S. Cl. 310—75 D **4 Claims**



1. For use with apparatus for performing work having a casing and a shaft projecting from an end wall thereof,

a. an electric motor including a rotor adapted to be positioned adjacent to the shaft in axial alignment therewith,

b. means for journaling the end of said rotor removed from the end wall of the casing, the opposite end of said rotor nearer to the end wall of said casing being characterized by the absence of journaling means,

c. means for coupling said motor directly to the shaft,

d. said coupling means comprising a flexible disk fixed to the end of said rotor nearer to the end wall of the casing, and

e. a hollow hub which is carried by said disk at its axis of rotation and receives the shaft.

3,854,064

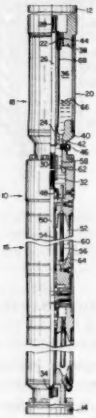
MECHANICAL SEAL ISOLATOR

Clarence E. Dunbar, Bartlesville, Okla., assignor to TRW, Inc., Cleveland, Ohio

Filed May 10, 1973, Ser. No. 358,921
Int. Cl. H02k *5/12*
U.S. Cl. 310—87 **8 Claims**

1. In a submergible pump installation, a rotary pump having a pump shaft section, means including an oil-filled electric

motor for driving said pump, said driving means having a shaft section provided with a mechanical seal for preventing the pumped fluid from passing therethrough to said motor, and a mechanical seal isolator comprising a housing interposed between said driving means and said pump and having a shaft section connecting said shaft section of said pump to said shaft



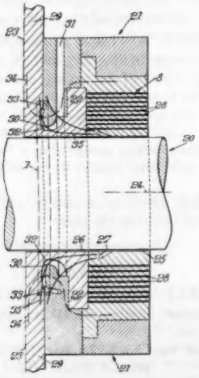
section of said driving means, said housing having a chamber therein communicating with said seal adjacent to one end of the housing, said chamber containing a fluid of greater density than said fluid to be pumped and said oil, said greater density fluid being in surrounding contact with said mechanical seal under all operating conditions of said motor, irrespective of the expansion and contraction of the oil in said motor.

3,854,065

DEVICE FOR INCREASING THE PRESSURE OF A CONDUCTIVE LIQUID AND UNIPOLAR DYNAMO INCORPORATING SAID DEVICE

Christian Rioux, Cachan, and Jean Lucidarme, Ste. Genevieve, both of France, assignors to Agence Nationale de Valorisation de la Recherche (Anvar), Neuilly-sur-Seine, France

Filed Apr. 2, 1973, Ser. No. 346,845
Claims priority, application France, Apr. 7, 1972, 72.12259
Int. Cl. H02k *31/04*
U.S. Cl. 310—178 **5 Claims**



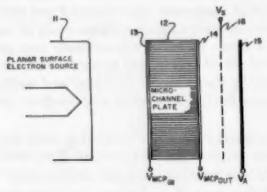
1. Device for increasing the pressure of an electrically conducting liquid, comprising, in combination, a crown of elongated and curved blades which are each electrically insulated and adjacent blades of which crown define between themselves a space for the passage of said liquid between a first end and a second end opposite the first in the direction of the length of the blades, inlet means for bringing the conductive liquid to the first end of each said space, electric current generating means adapted to create in each said space, when the conductive liquid is within said space, an electric current of high intensity and of direction substantially perpendicular to the surface defined by the longitudinal directions of the walls of the blades which define said space, and magnetic field generating means for generating a magnetic field having, at each space, a direction transverse with respect to said walls of the blades which define said space, so that said magnetic field and said electric current create in each space a Laplace force of substantially tangential direction to the walls of the blades which define that space, said force being oriented from said first towards said second end, said electric current generating means being independent of the said conductive liquid.

3,854,066

ELECTRON DEVICE INCORPORATING A MICROCHANNEL SECONDARY EMITTER

Wesley J. Payne, Bath, N.Y., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 21, 1973, Ser. No. 418,001
Int. Cl. H01j *43/02*
U.S. Cl. 313—105 **2 Claims**



1. A high gain electron device comprising:

a planar surface electron source having means associated therewith for causing electrons to be emitted therefrom; a microchannel plate having parallel conductive entrance and exit faces positioned proximate said surface with said entrance face and said planar surface in parallel relationship;

anode means positioned to receive electrons from the exit face of said microchannel plate;

means associated with said entrance face for receiving a modulating voltage;

means associated with said exit face for receiving a biasing voltage, whereby the voltages impressed upon said faces control the gain of the device by causing the entrance and exit faces to function as a control grid and screen grid respectively; and

a suppressor grid located between said exit face and anode for preventing anode electrons from returning to said exit face.

3,854,067

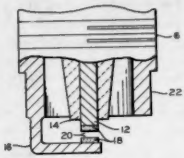
SPARK PLUG

Thomas D. Morgan, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 4, 1973, Ser. No. 403,419
Int. Cl. H01t *13/02*
U.S. Cl. 313—130 **3 Claims**

1. A spark plug for a combustion engine comprising in combination a metal shell, an insulator positioned within said shell, a first electrode passing through said insulator and projecting from the lower end of said insulator to form a spark-

producing area, a cap attached to the upper end of said first electrode, and a second electrode attached to said metal shell in juxtaposition with said first electrode to form a spark-gap



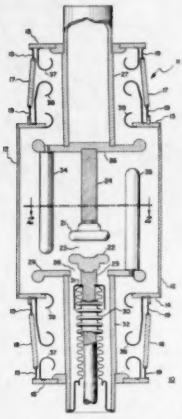
and a second spark-producing area, wherein said spark-producing areas of said electrodes consist of a button having thereon a coating of titanium dioxide.

3,854,068

SHIELD STRUCTURE FOR VACUUM ARC DISCHARGE DEVICES

Joseph A. Rich, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 26, 1973, Ser. No. 428,024
Int. Cl. H01j *1/53*
U.S. Cl. 313—240 **9 Claims**



1. An improved vacuum arc discharge device for carrying high currents at increased voltage levels comprising:

a hermetically sealed evacuated envelope, said envelope including a metallic cylindrical sidewall member, a pair of insulating sidewall members and a pair of oppositely disposed endwall members, each endwall member connected to one of said insulating sidewall members and said insulating sidewall members connected to the ends of said metallic sidewall member in a vacuum-tight seal;

a pair of support plates disposed in said envelope intermediate the ends thereof and supported by said endwall members;

a first plurality of spaced electrode members extending from one of said support plates;

a second plurality of spaced electrode members extending from the other of said support plates, said first and second plurality of spaced electrode members being substantially normal to said support plates and interleaved in alternating sequence to form a spaced circular array of electrodes;

means for causing an electric arc breakdown to be established between adjacently spaced arc-electrode members; and

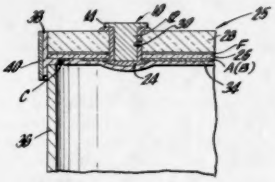
means for connecting said arc-electrode members in circuit with an electric load.

3,854,069

METHOD OF MAKING AN ELECTRICAL CONTACT FOR A COLOR PICKUP TUBE

Susumu Tagawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 22, 1972, Ser. No. 308,656
Claims priority, application Japan, Nov. 27, 1971, 46-95639
Int. Cl. H01j *5/48, 5/50*
U.S. Cl. 313—318 **7 Claims**



1. An improved electrical contact for use with an image signal pickup tube of the type havng a transparent faceplate assembly, the faceplate assembly being provided with at least one hole passing from its exterior surface to its interior surface and having an electrode disposed on its interior surface, wherein the improvement comprises a metal post having a main portion whose diameter is less than the diameter of the faceplate assembly hole and an enlarged head portion whose diameter is greater than the diameter of the faceplate assembly hole; and a coating of electrically conductive, deformable material hermetically sealed to the main portion of the metal post and extending adjacent the enlarged head portion, the coated main portion of the metal post being disposed in the faceplate assembly hole and extending therethrough, a portion of the coating on the end of the metal post, nearest to the exterior surface of the faceplate assembly forming an hermetic seal at the juncture of said exterior surface and said metal post and a portion of the coating on the end of the metal post nearest to the interior surface of the faceplate assembly being deformed to extend outward over a portion of said interior surface so as to contact a surface of the electrode remote from said interior surface and to provide a hermetic seal.

3,854,070

ELECTROLUMINESCENT DEVICE WITH VARIABLE EMISSION

Natalya Andreevna Vlasenko, ulitsa Entuziastsov, 15, kv. 175; Stepan Andreevich Zynio, prospekt Nauki, 142, korpus 14, kv. 24/4, and Zhanetta Alexandrovna Pukhly, bulvar Druzhby narodov, 3b, kv. 79, all of Kiev, U.S.S.R.

Filed Dec. 27, 1972, Ser. No. 319,046
Int. Cl. H05b *33/22, 33/26*
U.S. Cl. 313—503 **2 Claims**

1. An electroluminescent device having variable emission colors, said device comprising:

a substrate; and

at least five layers comprising, and being disposed onto said substrate in the following order:

a. a first electrode;

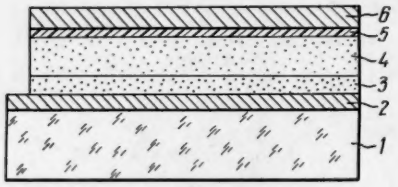
b. a protective layer being formed from a material which is transparent to luminescent emission;

c. a layer of electroluminescent substance, said protective layer having an index of refraction which is substantially equal to that of said electroluminescent substance

and being resistant to chemical reaction with the substances of the adjoining layers;

d. an insulating layer; and

e. a second electrode, one of said electrodes being partially transparent for luminescent emission, said first and second electrodes having a high reflection coefficient and forming a Fabry-Perot cavity tuned in resonance to a prescribed emission wavelength; the thickness of said protective layer, the coefficient of diffusion



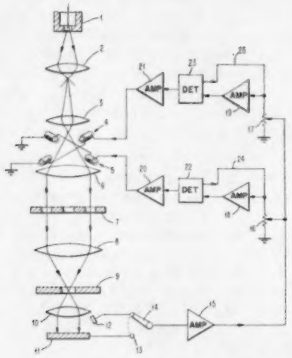
of the material of said protective layer into said layer of said electroluminescent substance and the coefficient of diffusion of the material of said first electrode into said protective layer being selected so that at the temperature of thermal annealing of said layer of said electroluminescent substances there is no diffusion into said layer of said electroluminescent substance from either the material of said first electrode or the material of said protective layer.

3,854,071

EXPOSURE REGULATED SCANNING ILLUMINATION MEANS FOR ELECTRON PROJECTION SYSTEMS

Marcus B. Heritage, Katonah, and George A. Wardly, Yorktown Heights, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 14, 1972, Ser. No. 315,246
Int. Cl. H01j *29/52*
U.S. Cl. 315—30 **5 Claims**



1. In an electron beam projection system of the type including at least an electron beam source, a pair of deflection coils, for deflecting said electron beam in a raster mode and a target wafer onto which said electron beam is projected and scanned, the combination comprising:

means for providing a regulated scanning rate for said system so that the instantaneous scan velocity is proportional to the current falling on the target wafer, said means including:

means for detecting electron current from said target wafer being scanned by said electron beam;

first and second feedback circuits connected to said electron current detection means, each of said feedback circuits including an attenuator means to provide a scan control signal, a deflection amplifier means connected to separate ones of said pair of deflection coils to produce deflection currents in said deflection coils;

an integrating amplifier means interconnected to said attenuator means for integrating the electron current from said target wafer; and

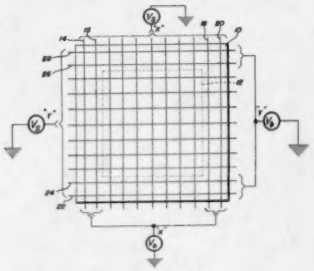
a scan limit detector means connected to said deflection amplifier means in each of said feedback circuits to detect when a given desired amplitude is attained by said deflection coil to provide a retrace of said electron beam back to its initial point.

3,854,072

METHOD FOR RELIABLY LIGHTING CELLS IN A PLASMA DISPLAY PANEL

Ray L. Trogdon, Urbana, Ill., assignor to University of Illinois Foundation, Champaign County, Ill.

Filed Apr. 26, 1972, Ser. No. 247,819
Int. Cl. H01j *17/30*
U.S. Cl. 315—169 R **4 Claims**



1. In entering information into information cells in a plasma panel in response to an applied selective address firing signal, sustaining signals being applied to said panel for sustaining the information entered into said panel, and said panel including a plurality of border cells around said information cells, an improved method for reliably entering said information comprising applying a border drive signal to said border cells for combining with said sustaining signals to discharge all of said plurality of border cells simultaneously with each application of said selective address firing signal.

3,854,073

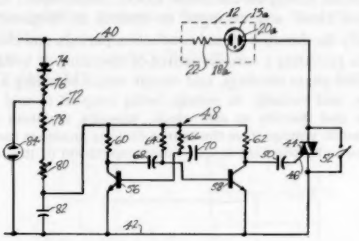
DISPLAY DEVICE AND CONTROL CIRCUIT THEREFOR

Robert C. Quenelle, Stanford, Calif., assignor to IMS Corporation, Albuquerque, N. Mex.

Continuation of Ser. No. 221,247, Jan. 27, 1972, abandoned. This application Sept. 17, 1973, Ser. No. 397,799
Int. Cl. H05b *37/02*
U.S. Cl. 315—200 A **11 Claims**

1. A control circuit for a glow discharge lamp having independent electrodes to be illuminated upon application thereto of a voltage of a given polarity comprising; circuit means connected to the glow discharge lamp for receiving and alternating current voltage and controlling which polarity of voltage of the alternating current voltage is to be applied to said glow discharge lamp, and a current control circuit connected to said circuit means and in circuit with the glow discharge lamp to control operation of said circuit means to apply to said

electrodes a series of voltage pulses of a first polarity for a first time interval and then apply a series of voltage pulses of opposite polarity for a second time interval, thereby alternately visibly illuminating the electrodes of the glow discharge lamp.

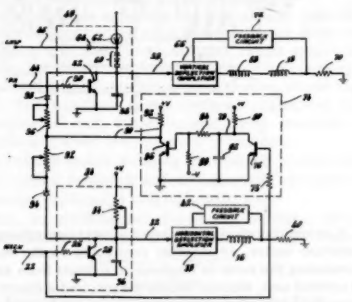


3,854,074

CIRCUIT FOR ELIMINATING CURRENT FLOW THROUGH THE DEFLECTION COILS OF A CRT WHEN THE BEAM IS NOT BEING MOVED THROUGH A RASTER PATTERN

John Demichiel, and Arthur Langer, both of Stamford, Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed June 28, 1973, Ser. No. 374,777
Int. Cl. H01j 29/70
U.S. Cl. 315—393 **13 Claims**



1. In a cathode ray tube (CRT) display device of the type having a horizontal deflection coil for controlling the horizontal position of the CRT beam, a vertical deflection coil for controlling the vertical position of the CRT beam, and horizontal and vertical control means for respectively controlling the current flowing through said horizontal and vertical deflection coils, said coils being operative under control of said control means for moving the beam through a selected raster pattern, a circuit for substantially eliminating current flow through both of said deflection, coils when the beam is not being moved through said raster pattern, comprising:

a time-out circuit which generates a selected output at all time except for a predetermined time period after it receives an input;

means operative when the beam is being moved through a raster pattern for applying successive pulses as inputs to said time-out circuit, the time period between said pulses being less than said predetermined time period; and

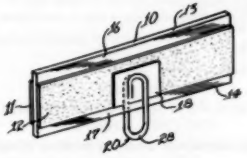
means included as part of each of said control means and responsive to the selected output from said time-out circuit for causing each of the control means to apply substantially zero current to the corresponding deflection coil.

3,854,075

MINIATURE METALIZED FILM CAPACITOR

John Phillip Uhi, Arlington, Va., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed Nov. 29, 1973, Ser. No. 420,236
Int. Cl. H01g 1/14
U.S. Cl. 317—260 **5 Claims**



1. A capacitor comprising at least one flexible dielectric layer, at least one first and one second flexible conductive layer disposed on opposite sides of said dielectric layer, an elongated conductive clip member having a looped end that extends externally of said flexible layers and forms a bight portion that may be removed, first and second substantially straight lead portions which are integral with said looped end and which normally are coplaner and which have first and second reverse bend bight portions that are integral with the inner ends of said first and second lead portions, respectively, said first and second reverse bend bight portions being biased toward each other so that they must be forced apart to receive said flexible layers therebetween, a first thin conductive foil piece positioned between said first conductive layer and said first reverse bend bight portion and a second thin conductive foil piece positioned between said second conductive layer and said second reversed bend portion, said foil pieces thereby being secured in place by the natural resiliency of said clip member when said flexible layers are positioned between said reverse bend bight portions and the force tending to separate said bight portions is removed.

3,854,076

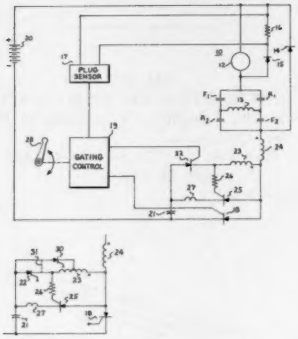
DUAL LEVEL PLUGGING CIRCUIT

Joe Chester Lambert, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Nov. 19, 1973, Ser. No. 416,805
Int. Cl. H02p 5/16
U.S. Cl. 318—341 **14 Claims**

1. In a pulse control system for an electric vehicle including a first thyristor for coupling a traction motor to a source of electric potential and a circuit for commutating the first thyristor after a predetermined time including a capacitor, an inductive winding and second and third thyristors, said second thyristor being energizable to couple said capacitor in circuit with the source of electric potential to allow the capacitor to charge in a first direction, and said third thyristor being energizable to allow the charge impressed upon said capacitor to flow through said inductive winding to reverse the polarity of

capacitor charge, the improvement comprising a fourth thyristor coupled in said circuit and energizable to conduct



charge from said capacitor about a portion of said inductive winding.

3,854,077

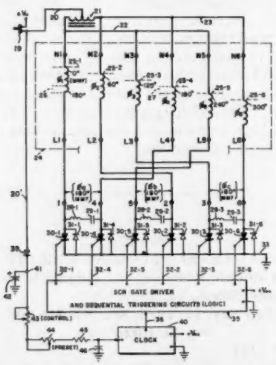
INDUCTION MOTOR SYSTEM WITH CONSTANT TORQUE

Jack E. Greenwell, Reno, Nev., assignor to Wm. Lear Enterprises, Inc., Reno, Nev.

Division of Ser. No. 144,847, May 19, 1971. This application Jan. 31, 1973, Ser. No. 328,327The portion of the term of this patent subsequent to Aug. 14, 1990, has been disclaimed.

Int. Cl. H02p *5/40*

U.S. Cl. 318—227 **10 Claims**



1. A polyphase motor system comprising a stator and an induction rotor, said stator containing a plurality of half-phase windings in paired consequent pole array with one pair for each effective phase for the motor in polyphase operation, a controlled rectifier for each of said half-phase windings, control means connected with said controlled rectifiers to selectively establish conduction periods therefor and thereby for their associated half-phase windings to provide a rotating magnetic field in the stator for corresponding operation of said induction rotor, said control means including a timing circuit that effects said successive conduction periods in related spaced time intervals among said half-phase windings once during each cycle of applied motor frequency, said timing circuit having an electronic clock, circuit means coupled to said clock and arranged to control its frequency and thereby the duration of said conduction periods, and electrical means providing a variable source of operating dc voltage for said half-phase windings, said circuit means including a Zener diode, said variable dc voltage being coupled to said Zener diode and thereby to said clock, whereby variation of the applied dc voltage from the source directly produces ranges of substantially constant torque output operation of the rotor.

3,854,078

COMMUTATORLESS MOTOR ARRANGEMENT

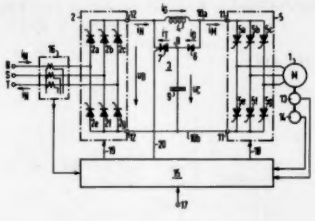
Klaus Hubner, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 18, 1973, Ser. No. 352,204

Claims priority, application Germany, Apr. 19, 1972, 2219018

Int. Cl. H02p *5/40*

U.S. Cl. 318—227 **2 Claims**



1. A commutatorless motor arrangement comprising a commutatorless motor, an inverter connected to the motor for commutating the same in response to outputs from an associated control unit, electric supply means, and a direct current intermediate circuit connected between said supply means and said inverter, said intermediate circuit including a smoothing inductance across which a self-induced voltage appears in response to a reduction of the current in said intermediate circuit, a controllable rectifying component connected in parallel with said smoothing inductance and poled with respect to said inductance so as to cause said self-induced voltage to be applied across said rectifying component in the forward conducting direction thereof, and a series circuit connected across the output of said intermediate circuit, said series circuit including an uncontrolled rectifying component, and a capacitor serially connected to said uncontrolled rectifying component, said uncontrolled rectifying component also being connected to said controlled rectifying component so as to conjointly define therewith a series circuit path in parallel with said smoothing inductance, with the control terminal of said controllable rectifier coupled to said control unit whereby said inductance, uncontrolled rectifier and controlled rectifier comprise a part of a common commutation circuit for said inverter.

3,854,079

SPEED CONTROL FOR D. C. MOTORS

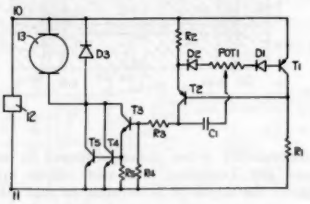
Robert Hulme Brown, Kingston-upon-Thames, England, assignor to C.A.V. Limited, Birmingham, England

Filed Nov. 10, 1972, Ser. No. 305,507

Claims priority, application Great Britain, Nov. 10, 1971, 52202/71

Int. Cl. H02p *5/16*

U.S. Cl. 318—341 **9 Claims**



1. A speed control apparatus for a D. C. motor comprising, in combination, a D. C. motor whose speed is desired to be controlled, and means for controlling the speed of said D. C. motor, said speed control means comprising:

Oscillator means comprising first and second transistors and a capacitor for producing a square wave oscillating signal; Means coupling said first and second transistors for effecting opposite respective conductive states thereof during operation;

A third transistor connected in series with said D. C. motor and a source of supply, means connecting said second transistor to said third transistor such that conduction of said second transistor effects conduction of said third transistor; said oscillator means including:

First circuit means including the base emitter path of said first transistor and an adjustable resistance element for charging said capacitor, said first circuit means being connected across said source of supply for charging said capacitor immediately upon the activation of said supply, said first transistor being rendered conductive during charging of said capacitor and being rendered nonconductive when said capacitor is charged;

Second circuit means including the collector emitter path of said second transistor and an adjustable resistance element for discharging said capacitor; and

Wherein the mark-space ratio of said oscillator means is controlled by varying said adjustable resistance elements.

3,854,080

ELECTRICAL DETENTING APPARATUS

Joseph E. Bambara, Brooklyn, and Gustave Pellegrino, Jr., Yonkers, both of N.Y., assignors to Maurer Commercial Products, Inc., Long Island, N.Y.

Filed July 17, 1973, Ser. No. 379,976

Int. Cl. H02p *7/00*

U.S. Cl. 318—436 **15 Claims**

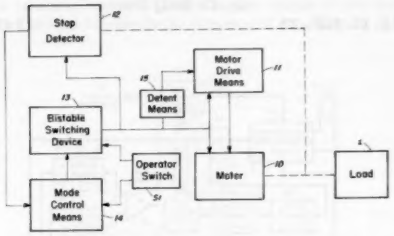
1. Apparatus for electrically detenting a translatable member of an electric motor having a plurality of windings at a position defined by the location of a predetermined one of said windings, comprising:

bistable switching means having an output admitting of a first or second electrical state;

commutating means responsive to the output of said bistable switching means admitting of aaid first electrical state for providing commutated output signals;

drive means responsive to said commutated output signals for supplying energizing potentials to said windings; and

detenting means coupled to the output of said bistable switching means for conditioning said drive means to supply an energizing potential to said predetermined winding when the output of said bistable switching means



admits of said second electrical state to detent said translatable member at the position defined by the location of said predetermined winding.

3,854,081

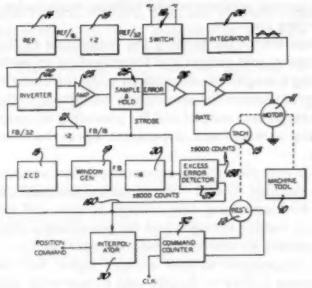
SERVO ERROR SIGNAL GENERATOR FOR NUMERICAL CONTROL SYSTEMS

Reno V. Benaglio, Bloomfield Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed May 14, 1973, Ser. No. 360,289

Int. Cl. G05b *21/02*

U.S. Cl. 318—636 **13 Claims**

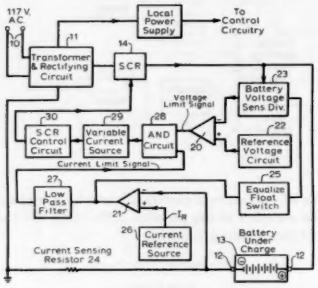


1. In a numerical control system for controlling the position of a controlled element within a predetermined coordinate system according to a stored program, a servo positioning apparatus comprising: first means operatively associated with said controlled element for producing a periodic signal quantity which varies in phase according to the position error of said controlled element relative to a commanded position; second means for producing a periodic reference signal in the form of an electrical voltage having an amplitude which varies linearly between maximum and minimum values over a period which is related to the period of said periodic signal quantity from said first means and of fixed phase and having a characteristic which varies substantially linearly over the period thereof, and third means interconnected with said first and second means for sampling and holding a quantity related to the instantaneous characteristic of said reference signal quantity upon the occurrence of said periodic signal quantity from said first means whereby the character of said reference quantity at the sample time represents the position error of said controlled element said first means including means for producing a sample strobe for each of said first periodic signal quantities.

3,854,082
BATTERY CHARGING CIRCUIT

James S. Nasby, and William L. Stelter, both of Skokie, Ill., assignors to Master Control Systems, Inc., Skokie, Ill.

Filed June 7, 1973, Ser. No. 367,771
Int. Cl. H02j 7/04
U.S. Cl. 320—22 11 Claims



1. A battery charging circuit comprising:

an input adapted for connection to an external power source;

an output adapted for connection to a battery to be charged;

a charging source coupled to said output and to said input, and capable of providing said output with a constant charging current and constant charging voltages of first and second predetermined voltage magnitudes at varying charging currents;

a voltage sensor for sensing the magnitude of the charging voltage at said output and for providing an output voltage having a magnitude dependent upon the charging voltage; a current sensor for sensing the mangitude of the charging current at said output and for providing an output voltage having a magnitude dependent upon the charging current;

an AND gate comprising a pair of serially connected transistors coupled to said voltage sensor and said current sensor for combining said voltage sensor and said current sensor output voltages and for providing a control signal responsive to said combined voltages; and

means responsive to said control signal for causing said charging source to supply said output with said constant current as long as said charging voltage is less than said first predetermined magnitude, for causing said charging source to supply said output with said constant voltage of said first predetermined magnitude when said charging voltage equals said first predetermined magnitude, and for causing said charging source to supply said output with said charging voltage of said second predetermined magnitude when the current sufficient to maintain said output at said first predetermined voltage magnitude falls below a predetermined limit.

3,854,083
MILLIMETER WAVE MIXER

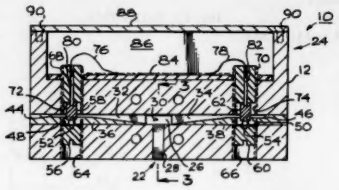
Garry N. Hulderman, Riverside; Leon J. Lader, Los Angeles, and Jay B. Winderman, Claremont, all of Calif., assignors to General Dynamics Corporation, Pomona, Calif.

Filed Oct. 11, 1973, Ser. No. 405,375
Int. Cl. H01p 5/12
U.S. Cl. 321—69 W 14 Claims

1. A packaging arrangement for a millimeter wave mixer to provide an output signal to a following circuit comprising:

a. a block body defining waveguide means and a hybrid junction circuit communicating with said waveguide means for the input of millimeter wave energy from said waveguide means to said junction circuit, said junction circuit having output arm means extending therefrom;

b. semiconductor holder means adjustably disposed in said body; and



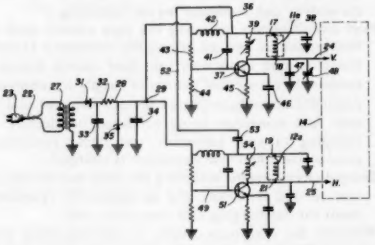
c. semiconductor mixer means disposed in said holder means and extending into said output arm means, whereby the depth of penetration of said mixer means into said output arm means may be adjusted by said holder means,

said body further defining output signal coupling means coupled to said mixer means.

3,854,084
ELECTRONIC OBJECT COMPARATOR USING INDUCTIVE SENSORS AND FREQUENCY COMPARISON

Edward I. Parker, 34 Oak Ridge Rd., Holden, Mass. 01520

Continuation of Ser. No. 195,697, Nov. 4, 1971, abandoned.
This application May 14, 1973, Ser. No. 359,857
Int. Cl. G01r 33/12
U.S. Cl. 324—34 R 1 Claim



1. An electronic comparator, comprising

a. a first coil having a predetermined inductance,

b. a second coil adapted to receive a workpiece to be tested and having when said workpiece is received substantially the same predetermined inductance,

c. a first circuit connected to the first coil, the first circuit having a first-point and delivering to an output lead a signal whose frequency and phase is indicative of the inductance of the first coil,

d. a second circuit connected to the second coil, said second circuit being substantially the same as said first circuit and having a second point located at a point in said second circuit structurally corresponding to the first point in said first circuit and delivering to an output lead a signal whose frequency and phase is indicative of the inductance of the second coil,

e. a means for comparing the frequencies at the output leads, the means being in a first indicating state when the frequencies are equal, and a second indicating state when the frequencies are not equal, and

f. an electrical coupling between the first and the second points, the coupling containing a capacitor, and being

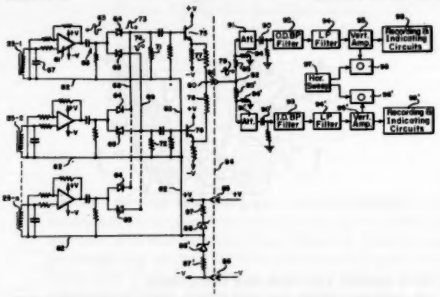
non-grounded for signals of the frequencies delivered by the circuits.

3,854,085

MULTI-PROBE FLUX LEAKAGE TESTING APPARATUS PRODUCING BIPOLAR SIGNALS FROM THE LARGEST SIMULTANEOUSLY OCCURRING SIGNALS OF EACH POLARITY

Sven E. Mansson, Hollviksnas, Sweden; Paul J. Bebick, Bronx, and Edward D. Spierer, Belle Harbor, both of N.Y., assignors to Magnetics Analysis Corporation, Mt. Vernon, N.Y.

Filed June 7, 1973, Ser. No. 367,883
Int. Cl. G01r *33/12*
U.S. Cl. 324—37 **12 Claims**



1. Multi-probe flux leakage testing apparatus for detecting flaws in an object relatively moving with respect to the probes which comprises

a. means for producing a steady state magnetic field in said object in the test region thereof,

b. a plurality of spaced leakage-flux probes for producing respective signal outputs having positive and negative excursions corresponding to flaws passing thereby in said test region,

c. means for rectifying and combining the positive portions of the signals from said probes and rectifying and combining the negative portions of the signals from said probes to yield positive and negative signals corresponding to the largest signal of each polarity simultaneously occurring in said probes,

d. adding means for adding said largest positive and negative signals to yield bipolar signals having corresponding positive and negative excursions,

e. and circuit means responsive to said bipolar signals for indicating flaws in a said object.

3,854,086

NON-LINEAR FLUX DETECTION DEVICE UTILIZING MAGNETIC THIN FILM

Teruji Watanabe, Niiza; Takasuke Fukui, Tokyo; Minoru Higurashi, Yokohama; Takao Sugisaki, Ichikawa, and Tatsushiro Ochiai, Matsudo, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd. and TDK Electronics Co., Ltd., both of Tokyo, Japan

Filed May 24, 1972, Ser. No. 256,329
Claims priority, application Japan, May 31, 1971, 46-37590
Int. Cl. G01r *33/02*
U.S. Cl. 324—43 R **7 Claims**

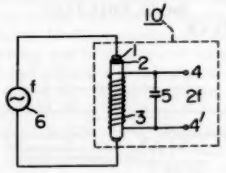
1. A non linear flux detection device utilizing a thin magnetic film comprising:

a. a flux detection element comprising a wire, a layer of magnetic material of uni-axial magnetic anisotropic characteristics plated on said wire, and a coil wound on said layer;

b. said layer of magnetic material having a hard magnetization axis in the direction of its axis and an easy magnetization axis in the circumferential direction;

c. an exciting means connected to said plated wire for applying thereto a predetermined signal of frequency f having a maximum amplitude sufficient only to produce a magnetic field less than the anisotropic magnetic field in said plated wire, and

d. a detecting means connected to the output of said coil and arranged to detect the presence of an amplitude of a



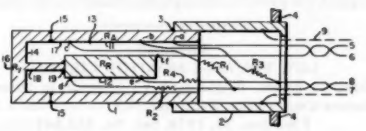
threshhold level responsive signal of frequency $2f$ which appears suddenly at the output of said coil when the strength of an external magnetic field in the direction of the hard magnetization axis exceeds a predetermined threshhold level, the threshhold level responsive signal remaining until the external magnetic field drops below said predetermined threshhold level, said threshhold level being greater than zero.

3,854,087

KELVIN BRIDGE TYPE CORROSION MEASURING PROBE

John Parsons Frenck, Newark, Del., and Edward Gilpin Poole, Jr., Chesapeake City, Md., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 6, 1973, Ser. No. 413,366
Int. Cl. G01r *27/02*
U.S. Cl. 324—65 CR **6 Claims**



1. A Kelvin double bridge type probe for measuring corrosion on specimen metal in a corrosive medium, the probe characterized in having, electrically interconnected, elements of

i. an enclosing shell, at least part of which is the specimen metal element of the bridge, one end of the shell being conductively connected to the specimen metal and to

ii. a reference body of specimen metal that is inside the shell and thereby protected from contact with the corrosive medium, the reference body being at least partially surrounded by the shell, in thermal proximity to the shell, and electrically insulated therefrom except for bridge connections, and

iii. two pairs of bridge resistances having electrical contact with a source of electricity, and connecting the specimen metal to the reference body, each resistance of each pair being connected to the other of the pair at one end with the other end connected to the specimen metal or the reference specimen, each pair of resistances having a junction between each resistance of the pair, each junction linked to output leads that provide a bridge signal as a function of corrosion of the specimen metal.

3,854,088

COUNTING AND ANALYSIS APPARATUS FOR PARTICLES SUSPENDED IN AN ELECTROLYTIC LIQUID

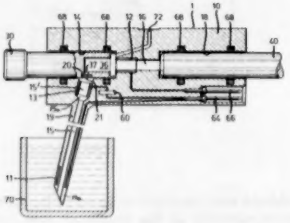
Hermann Gahwiler, Zurich, Switzerland, assignor to Contraves AG, Zurich, Switzerland

Filed Nov. 12, 1973, Ser. No. 414,839

Claims priority, application Switzerland, Nov. 30, 1972, 17483/72

Int. Cl. G01n 27/00

U.S. Cl. 324—71 CP 6 Claims



1. A counting- and analysis apparatus for particles suspended in an electrolytic liquid, comprising a sample container for the liquid, a conductivity cell, said conductivity cell being provided with means defining a bore having a predetermined diameter and serving as an electrical resistance measurement path through which flows the suspension, a respective electrode arranged to each side of said measurement path, said conductivity cell including a compartment arranged in front of the measurement path, a connection conduit leading from said compartment in front of said measurement path to said sample container, one of said respective electrodes comprising a direct-current supply electrode carried by the connection conduit and arranged in the sample container such that the gas bubbles formed thereat do not enter the connection conduit, and an auxiliary electrode arranged at least in the compartment in front of the measurement path for tapping-off the voltage fluctuations which are generated during passage of the particles through the measurement path.

3,854,089

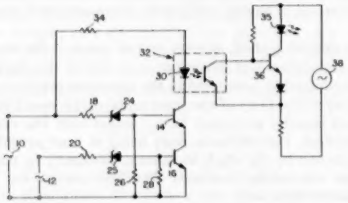
LOW VOLTAGE MONITOR CIRCUIT

Michael G. Emler, Brighton, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Jan. 14, 1974, Ser. No. 432,847

Int. Cl. G01r 31/00

U.S. Cl. 324—96 3 Claims



1. A monitoring circuit for monitoring the voltage across a dc. current source comprising a sensing transistor, means for connecting the base and emitter electrodes of said transistor to respective terminals of the source to be monitored, an optical coupling device having an input diode connected in series with the collector and emitter of said transistor across the source to be monitored, a control transistor having its input connected to the output of said optical coupling device, an annunciator connected in series with the collector and emitter of said control transistor, and means for connecting said annunciator and said control transistor across a current source independent of the source to be monitored.

3,854,090

BIMETAL TYPE INDICATOR

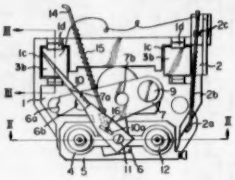
Hiroyuki Tashiro, and Mikio Takeshita, both of Kariya, Japan, assignors to Nippondenso Co., Ltd., Aichi-ken, Japan

Filed Dec. 12, 1972, Ser. No. 314,457

Claims priority, application Japan, Dec. 27, 1971, 46-593

Int. Cl. G01r 5/26

U.S. Cl. 324—106 6 Claims



1. A bimetal type indicator comprising:

an insulating plate provided with locating projection means, a gauge section carrier plate fixed to said locating projection means on said insulating plate,

a pointer support means fixed to said locating projection means on said gauge section carrier plate,

a pointer means having a slot formed therein and pivotally mounted on said pointer support means by means of a pin,

a bimetal means having an elongated portion extending into said slot,

a bimetal holding plate, on which said bimetal means is fixed, for adjusting the range of the angular motion of said pointer means,

a holding plate pivotally holding said bimetal holding plate at one point and pivotally mounted on said gauge section carrier plate at the other point by means of a rivet which is coaxial with said pin, and

a dial mounted on said pointer support means, and on which at least a zero point and a full range point are calibrated, wherein said slot in said pointer means extends substantially in parallel with a tangent to an arc described by said elongated part of said bimetal means when said bimetal holding plate is pivotally moved with respect to said one point, whereby said pointer means is so adjusted to be in alignment with said zero point by rotating said holding plate with respect to said rivet and thereafter said pointer means is so adjusted to be in alignment with said full range point by rotating said bimetal holding plate with respect to said one point.

3,854,091

DIRECT CURRENT CONVERTER FOR ISOLATING A MEASURING TRANSDUCER FROM ITS POWER SOURCE

Ole Friis Knudsen, Sonderborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Nov. 15, 1973, Ser. No. 416,180

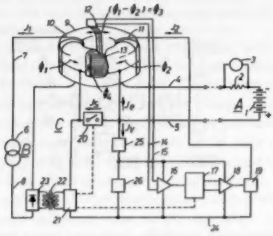
Claims priority, application Germany, Nov. 20, 1972, 2256881

Int. Cl. G01r 19/18

U.S. Cl. 324—118 10 Claims

1. A direct-current converter suitable for electrically isolating a measuring transducer from the power source for the measuring transducer, the converter comprising:

a magnetic core;
a primary winding on said core;
a secondary winding on said core;
means for supplying respective substantially constant direct currents to said primary and secondary windings;
a sensor winding on said core in which sensor winding a control voltage is developed when a difference occurs between the magnetic flux due to currents in said primary and said secondary winding respectively;



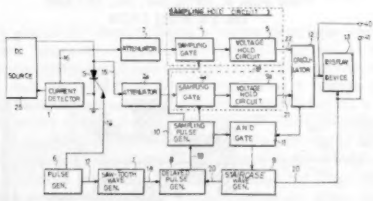
a regulator for adjusting said direct current supplied to said secondary winding in dependence upon said control voltage such that said magnetic flux difference tends to zero;
an energising winding for developing in said core a magnetic field at right angles to magnetic fields associated with said primary, secondary and sensor winding; and
means for supplying an energising current to said energising winding for periodically changing the magnitude of the magnetic induction of said core.

3,854,092

APPARATUS FOR MEASURING DYNAMIC CHARACTERISTICS OF SEMICONDUCTOR SWITCHING ELEMENTS

Tatsuo Tani, and Michinobu Tomita, both of Tokyo, Japan, assignors to Kogyo Gijutsuin, an extra-Ministrerial bureau of Japanese Government and Iwasaki Tsushinki Kabushiki Kaisha

Filed Dec. 22, 1971, Ser. No. 210,743
Claims priority, application Japan, Dec. 27, 1970, 45-119227
Int. Cl. G01r *31/22*
U.S. Cl. 324—158 SC **6 Claims**



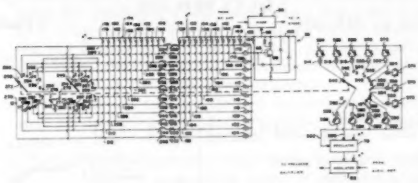
1. An apparatus for automatically measuring dynamic characteristics of a semiconductor switching element, comprising: a dc source for applying a dc bias voltage across electrodes of a semiconductor switching element, a pulse generator connected to the control electrode of the semiconductor switching element for applying at least one exciting pulse to said element to switch the element from the non-conductive state to the conductive state to develop a first output signal corresponding to the dynamic voltage characteristic of the semiconductor switching element, current detector means connected in series between said dc source and said semiconductor switching element for detecting the dynamic current flowing in the semiconductor switching element and for developing simultaneously with the development of said first output signal a second output signal corresponding to the dynamic current characteristic, a sampling pulse generator responsive to said exciting pulse for developing sampling pulses at regular intervals, a first sampling and holding circuit receptive of said second output signal of said current detector means and responsive to said sampling pulses for sampling values of said second output signal and for holding each sampled value until the occurrence of the immediately succeeding one of said sampling pulses to develop a sampled-and-held current signal, a second sampling and holding circuit receptive of said first output signal and responsive to said sampling pulses for sampling values of said first output signal and for holding each sampled value until the occurrence of the immediately succeeding one of said sampling pulses to develop a sampled-and-held voltage signal, calculating means simultaneously receptive of said sampled-and-held current and voltage signals for performing, at desired intervals, calculations therewith to derive therefrom at least one other dynamic parameter characteristic of the semiconductor switching element and for developing a third output signal corresponding thereto, and display means receptive of said third output signal for displaying the waveform of said third output signal to display said other dynamic parameter characteristic.

3,854,093

TRANSCEIVER CHANNEL SELECTOR

Louis E. Schonegg, Indianapolis, Ind., assignor to Regency Electronic, Inc., Indianapolis, Ind.

Filed Apr. 20, 1973, Ser. No. 353,140
Int. Cl. H04b *1/40*
U.S. Cl. 325—18 **14 Claims**



13. Channel selection means for a multi-channel transceiver comprising:
a. first selection means for selecting a transmit channel from a first plurality of channels,
b. second selection means for selecting a receive channel from a second plurality of channels,
c. means for actuating one of said selection means to select a channel,
d. means for actuating the other of said selection means to select a channel, and
e. said means for actuating one of said selection means including selectively operable means for actuating said the other of said selection means when said one of said selection means is actuated.

3,854,094

CRYSTAL CONTROLLED, FREQUENCY MODULATED TRANSMITTER

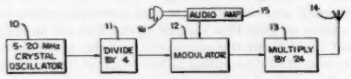
James F. Towler, Indianapolis, Ind., assignor to Regency Electronics, Inc., Indianapolis, Ind.

Filed Nov. 1, 1972, Ser. No. 302,811
Int. Cl. H03c *3/06*
U.S. Cl. 325—146 **16 Claims**

1. A frequency modulated transmitter which comprises:
a. oscillator means which includes:

1. a plurality of crystals having a fundamental frequency of oscillation between 5 to 20 MHz,
2. switch means for selecting any one of said crystals for use in controlling the output frequency of the transmitter, and 3. means for causing said selected crystal to oscillate and for producing a first carrier at the fundamental frequency of the crystal;

b. frequency dividing means to divide said first carrier by an integer greater than 1 to produce a second carrier;



c. means for converting audible sounds into an electrical audio signal;

d. modulation means for frequency modulating said second carrier in response to said audio signal whereby a first modulated carrier is produced; and

e. frequency multiplying means for multiplying said first modulated carrier by an integer greater than 3 whereby a second modulated carrier is produced for the output of the transmitter.

3,854,095

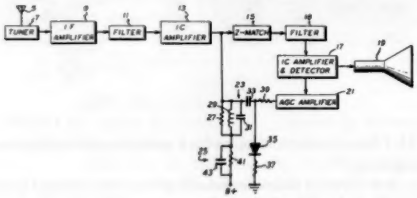
INTERSTAGE POLE SHIFTING NETWORK

Wilfred Leslie Hand, Clarence, N.Y., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Apr. 9, 1973, Ser. No. 349,557

Int. Cl. H04b 1/16

U.S. Cl. 325—490 **9 Claims**



1. In a signal receiver employing an integrated circuit (IC) having a pair of broad band amplifier stages connected by an impedance matching network with a junction therebetween and coupling a tuner stage to a detector stage with an automatic gain control (AGC) means coupled to the detector stage, an interstage pole shifting network comprising:

a potential source;

tuned circuit means coupling said potential source to said junction of said pair of IC broad band amplifier stages; and

impedance means including a series connected capacitor, pin diode, and resistor AC coupling said junction of said pair of IC broad band amplifier stages to a potential reference level, said capacitor and pin diode having a junction therebetween coupled to said AGC means, said pole shifting network effecting a shift from a broad band, low Q, minimum gain at a center frequency f_1 to a narrow band, high Q, maximum gain at a center frequency f_2 upon a signal strength shift from maximum to minimum.

3,854,096

SELF-TRIGGERED CIRCUIT ARRANGEMENT FOR A MEASURING AMPLIFIER

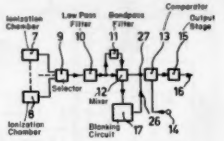
Bernd Hermeyer, Hamburg-Schenefeld, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed July 13, 1972, Ser. No. 271,346

Claims priority, application Germany, July 17, 1971, 2135921

Int. Cl. H05g 1/20

U.S. Cl. 328—114 **5 Claims**



1. In a measuring amplifier including input means for processing a desired signal and interference pulses whose rise time is shorter than the rise time of the desired signal and an output stage with its input coupled to the output of said input processing means, the improvement comprising a self-triggered blanking circuit including means for blanking interference pulses and comprising an input coupled to the output of the input processing means and an output coupled to the input of said measuring amplifier output stage, said blanking means comprising means for differentiating a signal received from said input processing means, a multistage switching amplifier coupled to said differentiating means and including an amplifier output stage with an RC pulse shaping circuit for extending the width of a pulse applied thereto, and means for coupling the output of said amplifier output stage to the input of said measuring amplifier output stage so as to prevent said measuring amplifier output stage from responding to an interference pulse supplied thereto by said input processing means.

3,854,097

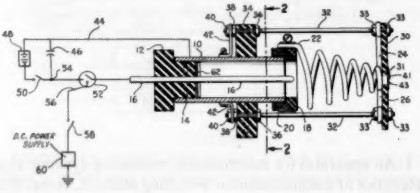
SELF-ENERGIZED PLASMA COMPRESSOR

James C. Fletcher, administrator of the National Aeronautics and Space Administration with respect to an invention of; Edward L. Shriver, 4505 Garth Rd., S.E., Huntsville, Ala. 35802, and Eduard B. Igenbergs, Rauchstrasse 3, 8000 Munich 80, Germany

Filed June 6, 1973, Ser. No. 367,606

Int. Cl. H01j 23/26

U.S. Cl. 328—233 **2 Claims**



1. An apparatus for producing high temperature compressed plasma comprising:

a. an elongated cylindrical first electrode;

b. a central rod electrode disposed coaxially of said first electrode out of contact therewith;

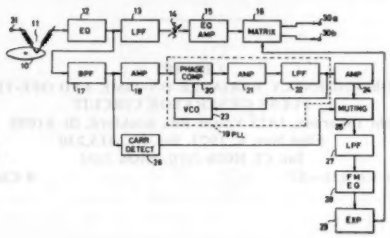
c. an electrically conductive element extending between said central rod electrode and an inner end of said first electrode;

d. means for applying a high voltage to said first electrode and said central rod electrode for causing said electrically conductive element to ionize producing a plasma which is accelerated out of the outer end of said first electrode;
e. an insulating connecting means carried on an outer end of said first electrode;
f. an elongated electrically conductive helical coil having a large diameter end and a small diameter end;
g. said large diameter end of said helical coil being connected to said connecting means and said small diameter end being spaced longitudinally therefrom;
h. means for electrically connecting said small diameter end of said helical coil to said first electrode;
i. said helical coil being in axial alignment with said elongated cylindrical first electrode so that a current path is formed between an outer end of said central rod electrode and said helical coil as said plasma is accelerated out the outer end of said first electrode producing current flow through said helical coil which in turn produces a time varying magnetic field that compresses said plasma adjacent said small diameter end of said coil;
j. whereby a source of high temperature compressed plasma is produced adjacent said small diameter end of said helical coil.

3,854,098
MULTICHANNEL DISC DEMODULATION CIRCUIT

Nobuaki Takahashi, Yamato; Masaaki Sato; Yoshiki Iwasaki, both of Yokohama, and Kazunori Nisikawa, Fujisawa, all of Japan, assignors to Victor Company of Japan, Ltd., Yokohama-City, Kanagawan-ken, Japan

Filed Jan. 23, 1973, Ser. No. 326,027
Claims priority, application Japan, Jan. 24, 1972, 47-9534
Int. Cl. H03d *3/18*; **G11b** *3/04*
U.S. Cl. 329—103 **12 Claims**

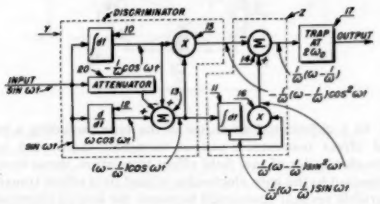


1. A circuit for demodulating a multichannel disc having recorded thereon a multiplex signal including a non-modulated audio signal and an angle-modulated carrier wave signal, said demodulation circuit comprising a voltage controlled oscillator means for generating a signal having a frequency which is varied in accordance with a control signal, a phase comparator circuit means including a differential amplifier for comparing the phase of the output signal of said voltage controlled oscillator with the phase of the angle-modulated wave signal and for producing an error signal corresponding to the detected phase difference, said error signal representing a demodulated audio signal, and means for applying a part of said error signal to said voltage controlled oscillator as said control signal therefor, whereby the frequency of the signal generated by said voltage controlled oscillator coincides with the frequency of the angle-modulated carrier, said phase comparator circuit means comprising a pair of transistor means connected in said differential amplifier configuration, a direct current biasing circuit including a series combination of two resistors connected across a power source means for applying a direct current bias voltage from the junction of the two resistors to the base electrodes of the pair of transistors, means for applying the angle-modulated wave signal from an amplifier through a preceding circuit to at least one of the base electrodes, said preceding circuit being constructed so that the AC impedance measured from the amplifier looking toward said phase comparator circuit is relatively large and the DC impedance looking back from the one base electrode is relatively small, whereby the angle-modulated wave signal is not phase-shifted when the amplitude of the envelope of the angle-modulated wave signal varies.

3,854,099
WIDEBAND COHERENT FM DETECTOR

Edward J. A. Kratt, 3rd, Montville, N.J., and Jacob Klapper, New York, N.Y., assignors to RFL Industries Inc., Boonton, N.J.

Filed Feb. 15, 1973, Ser. No. 332,600
Int. Cl. H03d *3/06*
U.S. Cl. 329—110 **8 Claims**

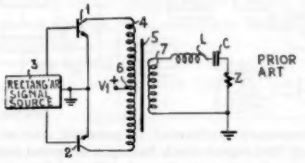


1. Apparatus for demodulating a frequency modulated carrier wave, which apparatus comprises,
a. a first network comprising a first integrator receiving said wave and producing a first output and a first differentiator receiving said wave and producing a second output, the two outputs being of substantially opposite polarity and having different amplitude vs frequency responses which cross at a predetermined frequency,
b. circuit elements applying the said two outputs to a first summer producing substantially a zero output at said predetermined frequency,
c. a first coherent amplitude detector having two inputs, and
d. circuit elements applying the output of said summer to one input of said detector, the other input to said detector being derived from the said first output, the output of said detector being the demodulated wave.

3,854,100
PUSH-PULL AMPLIFYING DEVICES WITH CLASS D TRANSISTORIZED AMPLIFIERS

Jean Pouzadoux, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Sept. 22, 1971, Ser. No. 182,689
Claims priority, application France, Oct. 2, 1970, 70.35703
Int. Cl. H03f
U.S. Cl. 330—15 **3 Claims**



1. A push-pull amplifying device comprising first and second transistorized class D amplifiers having respective inputs;

a common resonant load circuit for said amplifiers; and adding means for applying to each of said inputs of said amplifiers with opposite phases, a sum signal formed by the sinusoidal signal to be amplified and a rectangular signal having the same frequency and phase as this sinusoidal signal.

3,854,101

DIFFERENTIAL AMPLIFIERS

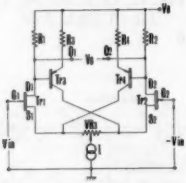
Sadao Muramatsu, Tokyo, Japan, assignor to Yashica Co., Ltd., Tokyo, Japan

Filed Sept. 4, 1973, Ser. No. 394,069

Claims priority, application Japan, Sept. 18, 1972, 47-93496

Int. Cl. H03f *3/68*

U.S. Cl. 330—30 D **4 Claims**



1. In a differential amplifier of the type including a pair of field effect transistors, output terminals connected to the drain electrodes of said field effect transistors, input terminals connected to the gate electrodes of said field effect transistors, a variable resistor connected between the source electrodes of said field effect transistors, and a source of constant current connected to an intermediate point of said variable resistor, the improvement which comprises a pair of transistors each associated with one of said field effect transistors, means for connecting the base electrode of each transistor to the drain electrode of one field effect transistor associated therewith, and means to connect the collector electrode of each transistor to the source electrode of the other field effect transistor.

3,854,102

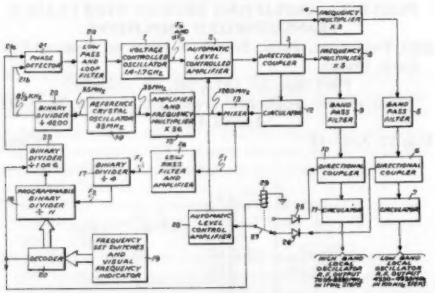
MULTIPLE FREQUENCY BAND FREQUENCY SYNTHESIZER

Arnold J. Seipel, Plantation, Fla.; Basil C. Thompson, Hopatcong, N.J.; Robert H. Haussmann, Wayne, N.J., and Jerome Deutsch, New Milford, N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Aug. 9, 1973, Ser. No. 387,079

Int. Cl. H03b *3/04, 19/00*

U.S. Cl. 331—1 A **32 Claims**



1. A frequency synthesizer to generate one at a time a plurality of first signals each having a different selected frequency in each of a plurality of different frequency bands comprising:

a voltage controlled oscillator capable of generating one at a time a plurality of second signals each having a different frequency in a given frequency band common to and predeterminedly related to said plurality of different frequency bands, the frequencies of said second signals being predeterminedly related to the frequencies of said first signals in each of said plurality of different frequency bands;

first means coupled to the output of said oscillator to frequency multiply the output signal of said oscillator by a plurality of different multiplication factors to provide one at a time said plurality of first signals in each of said plurality of different frequency bands; and

a single phase locked loop coupled between the input and output of said voltage controlled oscillator to control the generation of said plurality of second signals;

said phase locked loop including

second means coupled between the input and the output of said oscillator to divide the output signal of said oscillator by a plurality of different division factors to select the frequency of each of said first signals at the output of said first means, the frequencies of said first signals having a different constant incremental frequency step in each of said plurality of frequency bands;

said first means including

a plurality of series circuits each having a frequency multiplier and a band pass filter coupled in series with each other and to the output of said voltage controlled oscillator, said series circuits being equal in number to said plurality of different frequency bands, each of said frequency multipliers having a different multiplication factor, and each of said series circuits defining a different one of said plurality of different frequency bands; and

said second means further selecting a desired one of said plurality of different frequency bands as defined by an appropriate one of said series circuits.

3,854,103

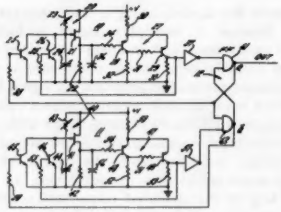
INDEPENDENTLY VARIABLE ON-TIME AND OFF-TIME PULSE GENERATOR CIRCUIT

Eiichi Takarada, 1423 Vassar Rd., Rockford, Ill. 61058

Filed Nov. 6, 1973, Ser. No. 413,230

Int. Cl. H03b *3/10;* **H03k** *5/04*

U.S. Cl. 331—55 **4 Claims**



1. A pulse generator for controlling the on-time and off-time of the power switches in an EDM power supply comprising; an on-time generator and an off-time generator, each of said generators including a timing circuit having adjusting means for continuously varying the period of said timing circuits, a Schmitt trigger level detector responsive to the signal produced by said timing circuit, a field effect source follower circuit interposed for isolation between said Schmitt trigger and said timing circuit, discharge means associated

with said timing circuit, said discharge means operating in response to the output of said Schmitt trigger; a bistable flip-flop circuit having first and second inputs and a pair of outputs, said first input of said flip-flop being coupled to the output of the Schmitt trigger of said off-time generator and said second input being coupled to the output of the Schmitt trigger of said on-time generator, said flip-flop being driven into a first stable state in response to the termination of the period of the on-time generator and a second stable state in response to the termination of the period of the off-time generator, a first means for disabling said on-time generator, a second means for disabling said off-time generator, the outputs of said flip-flop being coupled to said disabling means so that said on-time generator is disabled when said flip-flop is in its first stable state and said off-time generator is disabled when said flip-flop is in its second stable state, whereby the signal produced at the outputs of the flip-flop is a serial pulse train whose on-time period and off-time period are independently adjustable.

3,854,104

CIRCUIT FOR CONTROLLING SOUND GENERATOR FOR ALARM CLOCKS

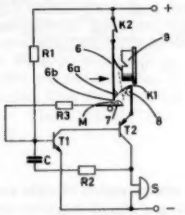
Friedrich Assmus, Schramberg, Germany, assignor to Gebruder Junghans GmbH, Schramberg, Germany

Filed Dec. 11, 1973, Ser. No. 423,780

Claims priority, application Germany, Dec. 13, 1972, 2260886

Int. Cl. H03k *3/282*

U.S. Cl. 331—108 A **13 Claims**



1. In a low frequency multivibrator circuit, especially for driving the sound generator of an alarm clock; a transistor having a base terminal and load terminals in the form of an emitter terminal and a collector terminal, a load having one side connected to one of said load terminals and the other side adapted for connection to one side of a source of direct current voltage, a first switch adapted for clock actuation and a second switch in series therewith adapted for manual actuation, one side of the serially connected switches connected to the other load terminal and the other side thereof adapted for connection to the other side of said source, a first resistor having one end connected to said other side of the serially connected switches, a capacitor having one side connected to said other end of said first resistor, a second resistor connected between the other side of said capacitor and said one load terminal, means operatively connecting the juncture of said first resistor and capacitor with said base terminal so as to bias the transistor to conduction when the capacitor attains a predetermined charge, a third resistor, and third switch means for momentarily connecting said third resistor in parallel with said first resistor to reduce the charging time of said capacitor.

3,854,105

ASTABLE MULTIVIBRATOR AND AMPLIFIER CIRCUIT WITH FREQUENCY CONTROL

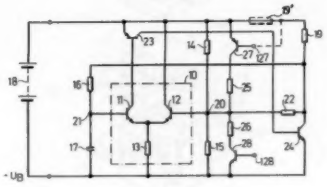
Gerhard Conzelmann, Leinfelden, and Adolf Kugelmann, Leonberg, both of Germany, assignors to Robert Bosch, GmbH, Gerlingen-Schillerhohe, Germany

Filed June 18, 1973, Ser. No. 370,978

Claims priority, application Germany, July 24, 1972, 2236209

Int. Cl. H03k *3/282*

U.S. Cl. 331—111 **13 Claims**



1. Astable multivibrator-amplifier circuit comprising

a bridge circuit having

a first branch including first and second resistors (**14, 15**) and a first diagonal junction (**20**) of the bridge between the resistors;

a second branch including a third resistor (**16**) and a capacitor (**17**) and a second diagonal junction (**21**) of the bridge between the third resistor and the capacitor;

a differential amplifier circuit (**10, 11, 12, 13**) connected between said first and second junctions (**20, 21**), the duty cycle of the change of state of said astable multivibrator circuit being determined by the threshold voltages appearing on at least one of said diagonal junctions upon change of charge on the capacitor (**17**), so that said multivibrator circuit will oscillate at a base frequency determined by (a) the resistance-capacitance values of said bridge and said differential amplifier circuit, and (b) the respective instantaneous upper and lower threshold voltages appearing at said diagonal junctions;

a switching element (**24**) and a resistor (**22**) connecting the output of the switching element and the bridge circuit;

and wherein the improvement comprises

contolled, cyclically operated switching means (**27, 28; 35, 36**) connected to and controlled by said astable circuit and being connected to control the value of the threshold voltage appearing on at least one of said diagonal junctions (**20, 21**) to change said value at the respective diagonal junction in synchronism with the frequency of oscillation of the astable circuit, to thereby change the switching frequency of the astable circuit.

3,854,106

DEPRESSED-PUCK MICROSTRIP CIRCULATOR

Carl P. Tresselt, Detroit, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 19, 1974, Ser. No. 443,893

Int. Cl. H01p *1/32*

U.S. Cl. 333—1.1 **11 Claims**

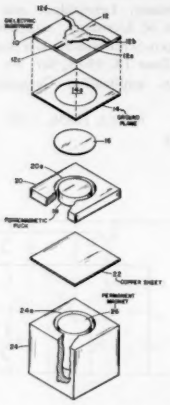
1. A circulator comprising:

a slab of dielectric material having first and second surfaces;

a conducting circuit carried on said first surface, said conducting circuit having at least three transmission lines converging in a common conductive region;

a ground plane having a recess therein intimately contacting said second surface;

a ferromagnetic body means disposed in said recess but not in said dielectric slab;



means for applying a magnetic field to said ferromagnetic body, in a direction generally perpendicular to the first and second surfaces of the slab of dielectric material.

3,854,107

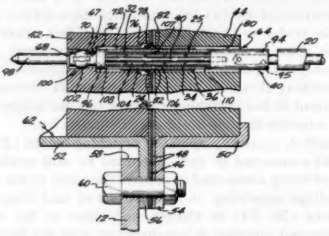
FILTERED CONNECTOR

Jeff Tuchto, Don Mills, Ontario, and Eugene S. Joseph, Scarboro, Ontario, both of Canada, assignors to The Bunker-Ramo Corporation, Oak Brook, Ill.

Continuation of Ser. Nos. 55,939, July 17, 1970, abandoned, and Ser. No. 860,175, Sept. 19, 1969, abandoned, and Ser. No. 584,745, Oct. 16, 1966, abandoned. This application Nov. 6, 1972, Ser. No. 303,713

Int. Cl. H03h *7/04;* **H01r** *13/66*

U.S. Cl. 333—79 **13 Claims**



1. In an electrical connector having a plurality of individually removable and replaceable filtered contact units, a main support body comprising a pair of blocks of insulating material secured to each other and having a plurality of aligned contact passages therethrough; and electrical ground contact means comprising a planar layer of conductive material sandwiched between said pair of blocks and having openings aligned with the passages in said blocks; each of said filtered contact units including an elongated contact pin and filter means including a cylinder of fragile dielectric material, said contact pin having a first end portion adapted for connection with a mating connector member, a second end portion adapted for connection with an electrical conductor, and an elongated central portion interconnecting said end portions; said cylinder of fragile dielectric material having an outer diameter only slightly less than the diameter of a corresponding one of said support body passages and is positioned wholly within said support body passage for protection against damage; means securing each of said contact pins individually in said support body but allowing removal in the direction of said second end portion and reinsertion of each contact pin individually without requiring separation of the blocks of insulating material; said cylinder of dielectric material having a relatively thin foil conductive sleeve on the outer surface thereof and a central through bore surrounding said contact pin central portion; said electrical ground contact means having surfaces extending into each of said passages and yieldingly engaging the conductive sleeve on said filter means; said cylindrical filter means having opposite ends retained inside said support body when inserted for use and being removable without requiring separation of the blocks of insulating material.

3,854,108

APPARATUS FOR COMPENSATION OF RIGHT AND LEFT PINCUSHION DISTORTION

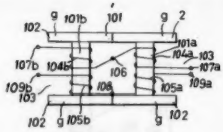
Einosuke Horie; Masakazu Kikuchi, both of Takasaki, and Shigekazu Hatori, Gunma, all of Japan, assignors to Taiyo Yuden Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1974, Ser. No. 435,588

Claims priority, application Japan, Jan. 23, 1973, 48-9201; Mar. 1, 1973, 48-24670

Int. Cl. H01f *7/00*

U.S. Cl. 335—210 **6 Claims**



1. Apparatus for compensation of right and left pincushion distortions comprising a closed magnetic circuit including a saturable magnetic core having right and left half portions symmetrical to one another and a branch portion defining an air gap and symmetrically arranged with respect to said right and left half portions, a pair of first and second windings on each of the right and left half portions, the first windings of both pairs being connected in series so as to have the same winding directions in relation to the saturable magnetic core and being adapted for being connected to a vertical deflection circuit, the second windings of both pairs being connected in series so as to have reverse winding directions in relation to the saturable magnetic core and being adapted for being connected to a horizontal deflection circuit.

3,854,109

DETECTING ELEMENTS OF EXTERNAL FORCE

Motohiro Gotanda, 3-6-29 Inakashira, Tokyo, Japan

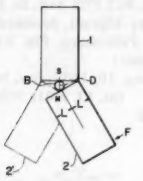
Filed July 27, 1973, Ser. No. 383,156

Int. Cl. H01h *36/00*

U.S. Cl. 335—207 **14 Claims**

1. An external force detecting device for sensing the entry of an intruder or the like, said device comprising at least first and second actuator members, said axially aligned actuator

members being oppositely disposed and including magnetic poles at the end surfaces thereof; electrically conductive contacts located on said end surfaces of said actuator members which, when in engagement with the electrically conductive contacts of another actuator member, complete an electrical circuit through said contacts, contacts of said first and second actuator members being normally held in engagement



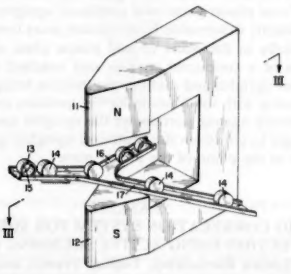
with one another by magnetic forces generated by said magnetic poles; and means, including electrical insulating means, disposed between said first and second actuator members, for providing a pivot about which said actuator members can rotate such that an external force applied to a said actuator member can cause breaking of the engagement between said electrically conductive contacts and hence breaking of the electrical circuit completed thereby.

3,854,110

METHOD OF ORIENTING BODIES IN MAGNETIC FIELD AND DEVICE FOR CARRYING SAME INTO EFFECT

Benyamin Alexandrovich Ioffe, ulitsa Raunas 45/2, kv. 81, Riga; Artur Eduardovich Mikelson, ulitsa Kr. Barona, 78, kv. 1, Latviiskaya, and Igor Mikhailovich Kirko, ulitsa Miera, 16, kv. 36, Riga, all of U.S.S.R.

Continuation of Ser. No. 884,790, Dec. 15, 1969, abandoned.
This application Feb. 28, 1972, Ser. No. 230,057
Int. Cl. H01f *7/02*
U.S. Cl. 335—302 **3 Claims**



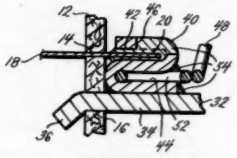
1. A method comprising creating a magnetic field in an orientation zone, orienting bodies by passing the same through said magnetic field, said magnetic field being created as a non-uniform permanent magnetic field in an orientation zone to induce currents in each a body during the movement thereof through said field and such that the values of said currents in each body in unoriented positions thereof are different at different points and such that said currents have a symmetrical distribution pattern only in an oriented position corresponding to a stable position of each of as it moves further in the magnetic field, using the same permanent magnetic field for inducing current in each said body and interacting with the thusly induced current to orient the body in which the current is induced.

3,854,111

PROTECTOR FOR ELECTRIC CIRCUITS

Angelo Urani, St. Louis, Mo., assignor to McGraw-Edison Company, Elgin, Ill.

Filed July 23, 1973, Ser. No. 381,996
Int. Cl. H01h *71/20*
U.S. Cl. 337—165 **5 Claims**



1. A heat-sensing circuit-opening protective device which comprises a metal heat-absorbing element, a metal conductor which has one end thereof coextensive with, but spaced away from, a portion of said metal heat-absorbing element, a spring, a generally S-shaped connector which defines a first generally U-shaped recess that freely accommodates said one end of said metal conductor and which defines a second generally U-shaped recess that accommodates one end of said spring in tightly-clamped relation, metal terminals which are electrically connected to said metal conductor and to said metal heat-absorbing member and which are connectable to an electric circuit, said spring biasing said connector for movement away from said one end of said metal conductor and away from said portion of said metal heat-absorbing element to interrupt said electric circuit, and a mass of low-melting point alloy that normally mechanically connects and electrically bonds said connector to said portion of said metal heat-absorbing element and that also normally mechanically connects and electrically bonds said connector to said one end of said metal conductor while holding the first said generally U-shaped recess telescoped over said one end of said metal conductor, said connector being a unitary piece of metal which is free of electrical and thermal interfaces, said low-melting point alloy responding to heat to permit said spring to move said connector away from said one end of said metal conductor and away from said portion of said metal heat-absorbing member and thereby interrupt said electric circuit.

3,854,112

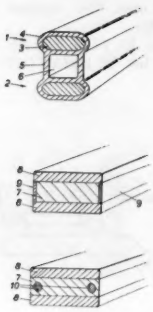
PIEZORESISTIVE GLASS STRESS TRANSDUCER

John Christopher Greenwood, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Dec. 7, 1973, Ser. No. 422,907
Claims priority, application Great Britain, Dec. 19, 1972, 58481/72
Int. Cl. H01c *9/06*
U.S. Cl. 338—47 **9 Claims**

1. A piezoresistive stress transducer comprising:
an element of piezoresistive glass;
at least two physically separated electrodes each in contact with at least a portion of said element, thereby providing variations of electrical resistance in said element as a

result of application of said stress to said element; and means comprising at least a partial housing of insulating



glass joined to said element around at least a portion of the surface thereof.

3,854,113

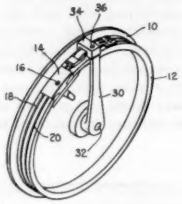
VARIABLE RESISTANCE CONSTANT TENSION AND LUBRICATION DEVICE

James C. Fletcher, Administrator of the Natl. Aeronautics and Space Administration with respect to an invention by, and Henry J. Smith, 2210 MacFarland Dr., Brevard, Fla. 32922

Filed Apr. 4, 1973, Ser. No. 347,952

Int. Cl. H01c *5/02*

U.S. Cl. 338—75 **6 Claims**



1. A variable resistance device comprising:

A. a cylindrical housing,

B. an elongated resistance wire fixed to said cylindrical housing,

C. a movable arm having a supporting block disposed adjacent said resistance wire,

D. an arcuate spring steel member,

E. pivot means carried adjacent a central portion of said arcuate spring steel member engaging said supporting block,

F. a leather wiper member carried adjacent one end of said arcuate spring steel member engaging said resistance wire for aiding in maintaining said resistance wire clean as said movable arm is shifted,

G. another end of said spring steel member being in contact with said resistance wire so that a balanced tension is maintained on said end of said arcuate spring steel member about said pivot means.

3,854,114

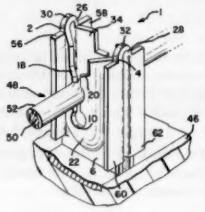
NOTCHED PLATE CLASP APPARATUS

James Albert Kloth, 813 37th Ave., St. Petersburg, Fla. 33064, and George Henry Vigeant, deceased, late of 3932 Yardley Ave., North, St. Petersburg, Fla. 33713 (by Mrs. George Henry Vigeant, heir)

Filed Aug. 10, 1972, Ser. No. 279,612

Int. Cl. H01r *9/08*

U.S. Cl. 339—97 R **7 Claims**



1. In an electrical contact stamped and formed from a notched planar plate and constrained by a housing for desired resilient deflection upon forcible insertion of an electrical conductor wire into a notched portion of the planar plate, the improvement comprising; structure for stiffening the plate to prevent undesired buckling thereof and structure to constrain the plate for cantilever deflection without buckling thereof, said plate including a pair of cantilever uprights joined by a web, said notched portion of the plate being defined in said web to extend generally longitudinally of said uprights, said web being bulged outwardly from the plane of said planar plate for stiffening said web and preventing buckling of said contact upon insertion of a conductor wire into said slotted portion, said cantilever flanges having each a longitudinally attached stiffener flange bent generally outwardly from the plane of said planar plate, said cantilever uprights being stiffly and resiliently deformable by deflection away from each other substantially in the plane of said planar plate upon forceful insertion of a conductor wire in said notched portion, said cantilever uprights and said flanges thereon being mounted in said housing with the housing having portions thereof engagingly bearing against portions of the uprights and portions of the flanges to constrain the cantilever uprights against deflection out of the plane of the planar plate.

3,854,115

ECHO CORRELATION SYSTEM FOR SUBMARINE DETECTION USING ACTIVE SOUNDING DEVICES

Robert Lucien Barthelemy, Toulon, France, assignor to Etat Francais represente par le Ministre d'Etat charge de la Defense Nationale-Delegation Ministerielle pour l'Armement-Direction Technique des Constructions navales, Paris, France

Filed May 18, 1973, Ser. No. 361,508

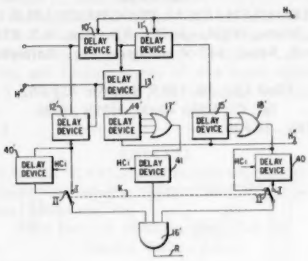
Claims priority, application France, May 18, 1972, 72.17848

Int. Cl. G01s *9/66, 7/66*

U.S. Cl. 340—3 R **9 Claims**

1. A system for treating the echo signals received by an active sounding device to provide correlation between echoes received during the course of *N* successive sweeps, said system comprising first means including an input terminal and *N*—1

serially connected delay devices each providing a delay equal to the duration B of a sweep; second means including N storage means comprising a first storage means connected to said



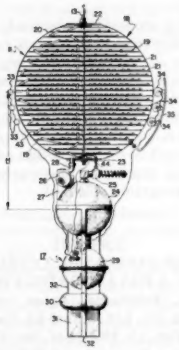
input terminal and $N-1$ further storage means connected to the outputs of said $N-1$ devices and providing arithmetically increasing storage times; and an N-input coincident gate connected to the outputs of said N storage means.

3,854,116

UNDERWATER SOUND DETECTION

William J. Toulis, Columbus, Ohio, and Douglas A. King, Corona, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 24, 1966, Ser. No. 574,748
Int. Cl. G10k *11/06*
U.S. Cl. 340—8 L **3 Claims**



1. Apparatus for focusing acoustic energy at an underwater operating depth, and comprising:

a. A collapsible array of gas-receiving compliant tube elements arranged in an approximate Luneberg-type distribution and fabricated of a material having a stiffness less than the stiffness of the gas to be received therein at the apparatus underwater operating depth,

b. A supply of pressurized gas separate from said collapsible array, and

c. Means for flowing gas from said gas supply to said compliant tube elements for array inflation at a pressure just slightly greater than the pressure corresponding to the apparatus underwater operating depth,

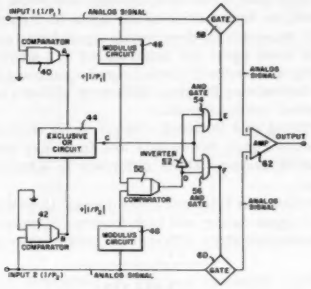
said collapsible array being comprised of uniformly spaced-apart planar sub-arrays of joined concentric tube elements of circular plan when expanded from a collapsed condition and inflated to an operating condition.

3,854,117

PHASE-DIFFERENCE DETECTOR

Noel O. Fothergill, 2210-46 Loyola Ave., Ottawa, Ontario, Canada

Filed Aug. 10, 1973, Ser. No. 387,401
Int. Cl. G01s *3/80*
U.S. Cl. 340—16 R **10 Claims**



1. A phase difference detector adapted to receive first and second versions from two different sources of a common input signal, with a variable phase difference between the two versions, and to provide an output which is a non-linear indication of the said phase difference, said detector comprising:

means for comparing the two versions, and when both are of the same polarity, for selecting the version which has an instantaneous value closer to zero, and for presenting that version as the instantaneous output; and

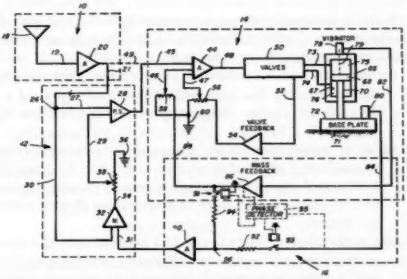
means for comparing the two versions, and when the two versions are of opposite polarity, for presenting zero as the instantaneous output.

3,854,118

SERVO HYDRAULIC VIBRATOR WITH PHASE ERROR CORRECTION

Charles R. Pelton, Ponca City, Okla., assignor to The Pelton Company, Inc., Ponca City, Okla.

Filed Nov. 10, 1971, Ser. No. 197,254
Int. Cl. G01v *1/16*
U.S. Cl. 340—17 **6 Claims**



1. In a geophysical earth vibrator system including:

means to provide a reference sweep signal having low and high frequency portions,

a hydraulic actuated reaction mass type vibrator,

a baseplate resting on said earth and hydraulically connected to said mass of said vibrator,

electrohydraulic servo-valve means to drive said hydraulic actuated vibrator,

a sensor means on said baseplate to provide a first control signal as a function of the acceleration of said baseplate,

sensor means to provide a second control signal responsive to a function of the relative displacement of said mass and said baseplate,

a phase control network including means to generate an error signal proportional to the phase error between a feedback control siganl and said reference sweep signal, and

means to connect said reference sweep signal to said electrohydraulic servo-valve through said phase control network, to form a drive sweep signal to drive the vibrator the phase of said drive sweep signal being controlled by said error signal; the improvement in a method of generating said feedback control signal comprising the steps of:

a. determining the phase difference between said first and second control signals,

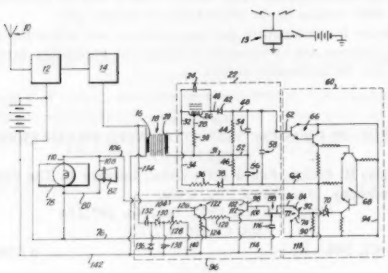
b. forming said feedback control signal from said second control signal during said low frequency portion when said determined phase difference is substantially zero, and

c. forming said feedback control signal from said first control signal during said high frequency portion when said determined phase difference is greater than zero.

3,854,119
VEHICLE PROXIMITY ALERTING MEANS

Benjamin Friedman, Pomona, and Guy E. Adams, Monroe, both of N.Y., assignors to Solitron Devices, Inc., Tappan, N.Y.

Filed Aug. 11, 1972, Ser. No. 279,993
Int. Cl. H04b *1/16*
U.S. Cl. 340—33 **22 Claims**



1. In a vehicular system for enabling vehicular proximity warning to be accomplished in accordance with an amplitude modulated signal, the combination comprising:

transmitter means carried by one vehicle, said transmitter means sending the amplitude modulated signal of a predetermined carrier frequency with a modulation signature;

receiver means carried by a second vehicle, said receiver means being adapted to receive and detect said amplitude modulated signal of a predetermined carrier frequency and modulation signature as transmitted by said transmitter means;

resonator circuit means tuned to a predetermined pass band to provide a positive potential when identifying said signal and a negative potential otherwise to operate switching means' in said resonator circuit means, said resonator circuit means being connected to means to control an output of said switching means in accordance with the strength of said amplitude modulated signal as received by said receiver means;

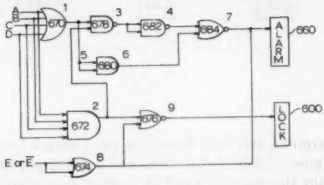
a power source for energizing said receiver means and for providing energy to said resonator circuit means and said means to control output of said switching means; and

alerting means connected to said power source and said resonator circuit means and said means to control the output of said switching means to be operated thereby to provide range information to said second vehicle in reference to the proximity of said first vehicle.

3,854,120
ELECTROMECHANICAL PROGRAMMABLE LOCK

Victor G. Matto, Highlands Dr., Kinnelon, N.J. 07405, and Sandor A. Veres, 247 Washington Ave., Rutherford, N.J. 07070

Filed Apr. 30, 1973, Ser. No. 355,583
Int. Cl. E05b *49/00*; H01h *27/00*
U.S. Cl. 340—164 R **14 Claims**



1. An electromechanical programmable lock comprising

an annular lock section and an annular key section removably disposed within said lock section,

said lock section having a plurality of first electrical lock contacts,

means in said lock section for selectively connecting one of said first electrical lock contacts in a first circuit, such selective connection comprising pre-programming of said lock section,

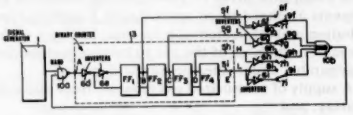
said key section having a plurality of second electrical key contacts, each of which contacts one of said lock contacts, and

means in said key section for selectively connecting one of said second electrical key contacts in a second circuit, such selective connection comprising pre-programming of said key section, whereby a selected first lock contact and a selected second key contact can be pre-programmed to match so that, when the pre-programmed key section is inserted into and matches the pre-programmed lock section, said first circuit and said second circuit are connected and operate as a permitted state for the programmable lock.

3,854,121
APPARATUS FOR FIXING THE LEVELS OF OUTPUTS FROM A DATA STORING CIRCUIT

Hisaharu Ogawa, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Saiwai-ku, Kawasaki-shi, Japan

Filed Feb. 22, 1973, Ser. No. 334,571
Claims priority, application Japan, Feb. 29, 1972, 47-20214
Int. Cl. H04q *1/00*
U.S. Cl. 340—168 R **10 Claims**



1. An apparatus for fixing the levels of outputs from a circuit comprising:

a circuit having a memory function, outputs from which have their levels varied according to the manner in which input signals are received;

a signal generator for supplying said input signals to said circuit having a memory function;

an input gate circuit controlled by a separately generated control signal so as to permit or prevent any further supply of said input signals to said circuit having a memory function;

a first means for selecting a desired level state from output level states of said circuit having a memory function; and a second means for generating said control signal when said desired level state has been produced, thereby preventing any further supply of said input signals to said circuit having a memory function to fix the desired level state.

3,854,122

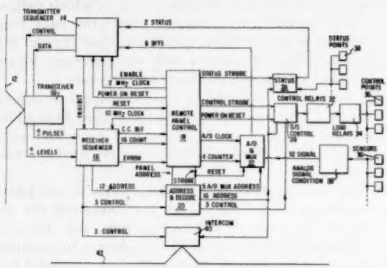
REMOTE STATION ADDRESSING SYSTEM

Charles Cross, Glenside, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 12, 1972, Ser. No. 314,305

Int. Cl. H04q 9/00

U.S. Cl. 340—151 **6 Claims**



1. A remote station for use in a supervisory system to control and monitor a plurality of remote field points in response to messages from a central station having address and verifying portions, said remote station comprising

receiver sequencer means for receiving the messages from the central station and supplying an error signal if the address portion is not verified by the verifying portion;

a plurality of field points;

address and decode means connected with said receiver sequencer means for enabling said field points in accordance with the address portions of the message prior to verification of the messages by said receiver sequencer means;

transmitter sequencer means connected with said field points for transmitting return messages to the central control station; and

control panel means connected with said receiver sequencer means and said transmitter sequencer means and responsive to said error signal to prevent the transmitting of said return messages by said transmitter sequencer means if the verifying portion does not verify the address portion of the messages.

3,854,123

REMOTELY CONTROLLABLE TUNING SYSTEM FOR TELEVISION TUNERS

Frank G. Banach, Oak Lawn, Ill., assignor to Zenith Radio Corporation, Chicago, Ill.

Filed Apr. 2, 1973, Ser. No. 347,289

Int. Cl. H04b 1/16

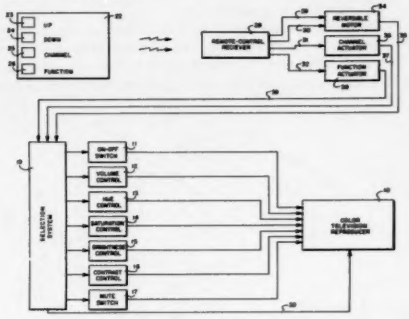
U.S. Cl. 340—171 R **14 Claims**

1. A television function-selection system comprising:

a television receiver having a plurality of different functions to be controlled;

a corresponding plurality of operators individually spaced successively apart and each responsive to an impulse for individually operating respective different ones of said functions;

movable means, including a selectively rotatable lead screw and a nut movable along said lead screw upon rotation thereof, movable to selected different ones of a plurality of different positions individually corresponding to respective different ones of said operators and, at each position, selectively delivering said impulse to the corresponding operator;



and means responsive to external command signals for selectively controlling movement of said movable means between said different positions and delivery of said impulse to said operators.

3,854,124

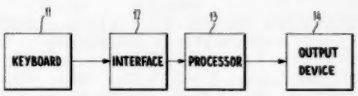
ELECTRONIC CALCULATOR

George E. Comstock, Danville, and Thomas P. Gilmer, Jr., Castro Valley, both of Calif., assignors to Friden, Inc., San Leandro, Calif. and The Singer Company, New York, N.Y.

Filed Nov. 21, 1966, Ser. No. 595,694

Int. Cl. G06f 3/00

U.S. Cl. 340—172.5 **15 Claims**



1. In a calculator, the combination comprising: an arithmetic portion; keyboard means coupled to said arithmetic portion for manually entering data into said arithmetic portion; a nonaddressable storage coupled to said arithmetic portion having more than one register; said storage including means to enter data therein and retrieve data therefrom in a first-in, first-out arrangement; and said keyboard having means for enabling access to said storage to store data therein and to recall such data therefrom as desired.

3,854,125

AUTOMATED DIAGNOSTIC TESTING SYSTEM

Ernest H. Ehling, Hackensack; Philip C. Jackson, Oakland, and James V. McCarthy, Riverdale, all of N.J., assignors to Instrumentation Engineering, Inc., Franklin Lakes, N.J.

Filed June 15, 1971, Ser. No. 153,902

Int. Cl. G06f 11/00

U.S. Cl. 340—172.5 **22 Claims**

1. In a system for automatically testing units having electrical circuits by exciting the unit under test with a stimulus device and obtaining an indication of the unit's response thereto by at least one measurement device and wherein the unit has a plurality of terminals, the improvement comprising means for connecting selected unit terminals to at least one device terminal, including:

input means for generating programmable command signals;

a plurality of buses over which signals to and from unit terminals may be transmitted;

a memory for storing electrical indications of existing terminal connections made via said buses;

switch means associated with the unit terminals and controllably operable to individually connect unit terminals to each of the plurality of buses;

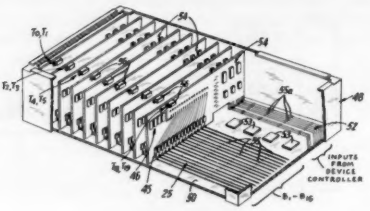
switch means associated with the device terminals and controllably operable to connect at least said one device terminal to at least one bus;

control means responsive to said command signals including means for interrogating the memory storing said indications of existing connections of terminals to the buses to locate a bus to which no predetermined terminal connection is made and which thereby is available for connection to the terminals to be interconnected;

means responsive to said interrogation for storing in the memory an indication that a terminal connection is to be made to said bus determined from said interrogation to be available, and

means for generating switch control signals; and

means for coupling the control means to the respective switch means so as to operate the switch means associated with the available bus in response to the switch control signals.

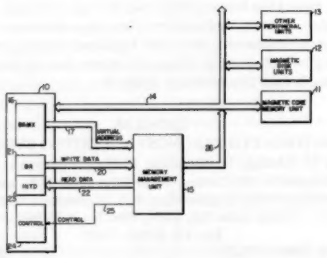


3,854,126

CIRCUIT FOR CONVERTING VIRTUAL ADDRESSES INTO PHYSICAL ADDRESSES

Robert C. Gray, Cambridge; Larry P. Wade, Acton, both of Mass., and Adrianus J. Van De Goor, Wilnes, Netherlands, assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 10, 1972, Ser. No. 296,026
Int. Cl. G06f *9/20*
U.S. Cl. 340—172.5 **9 Claims**



1. A data processing system comprising:

A. a bus comprising a plurality of conductors,

B. a plurality of physically addressed storage locations connectible to said bus,

C. a central processor unit for processing a program stored in certain of said storage locations, said program being written for operation in a virtual machine and including virtual addresses, each virtual address being divided into first, second and third portions, and

D. an address conversion unit connected between said central processor unit and said bus for transmitting onto the bus, in response to each virtual address from said central processor unit, a physical address for selecting a said storage location, said address conversion unit including:

i. a plurality of page address registers, each storing a base physical address for a block of consecutively addressed ones of said storage locations,

ii. a page descriptor register corresponding to each of said page address registers, each page descriptor register storing a page length number representing the number of said consecutive storage locations which have been assigned to the base physical address in the corresponding one of said page address registers,

iii. means responsive to the receipt of the first portion of each virtual address from said central processor unit for identifying a page address register and a corresponding page descriptor register,

iv. address transmission enabling means for transmitting an enabling signal in response to a comparison of the second portion of each virtual address which indicates a selected number of locations and the page length number in the identified page descriptor register if the desired physical address will be a storage location assigned to the said page address register,

v. means responsive to said enabling signal to combine the base physical address in the identified page address register and the second portion of each said virtual address for generating intermediate physical addresses, and

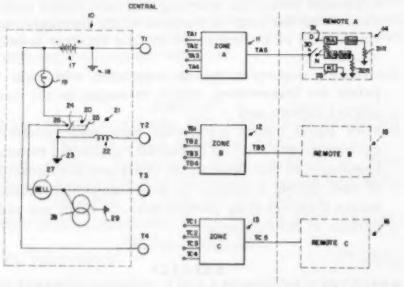
vi. final address generating means coupled to said address transmission enabling means for combining the third portion of each said virtual address and the corresponding intermediate physical address to produce a final physical address for transmission onto said bus.

3,854,127

ALARM SYSTEM WITH AUTOMATIC RINGBACK

Clarence Stanley Damon, 6758 Penn Ave., Kansas City, Mo. 64113

Filed Sept. 18, 1973, Ser. No. 398,301
Int. Cl. G08b *25/00*
U.S. Cl. 340—213.2 **18 Claims**



1. An alarm system with automatic ringback from a central location to a remote site comprising:

a manually operated remote switch at said remote site connected to said central location;

a remote indicator at said remote site connected to said central location;

a switching means at said central location having a first terminal connected to said remote indicator.and a second terminal connected to a signal source;

a sensing means at said central location connected to said remote switch for sensing the condition of said remote switch; and

a switch control means at said central location connected to said sensing means for interconnecting said switching

means first and second terminals for a limited time in response to a first sensed condition;

whereby said remote indicator is activated by said signal source for said limited time.

3,854,128

SAFETY DEVICE FOR CRANE

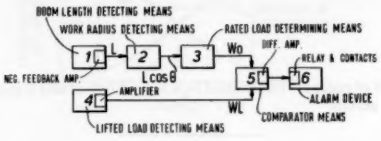
Susumu Yamagishi, Tokyo, Japan, assignor to Unic Corporation, Tokyo, Japan

Filed Dec. 4, 1972, Ser. No. 312,225

Claims priority, application Japan, Dec. 29, 1971, 46-173

Int. Cl. B66c *13/48*; **G08b** *21/00*

U.S. Cl. 340—267 C **10 Claims**



1. A sefety device for a crane comprising boom length detecting means for detecting a boom length including means for generating a first electric signal corresponding to boom length, work radius detecting means for receiving said first signal and for generating directly a second electric signal corresponding to work radius, said second signal being a product of said first signal and a third cosine signal corresponding to a boom inclination angle, said cosine signal being generated in said work radius detecting means, lifted load detecting means for detecting a lifted load including means for generating a fourth electric signal corresponding to the lifted load, a rated load determining means including means for converting said second signal received therein to a fifth electric signal indicating a rated load corresponding to said work radius, said rated load determining means including a polygonal line function generator having an operational amplifier circuit and diode switches for changing amplification factors according to said second signal, and comparator means for comparing said fifth signal with said fourth signal to produce a sixth output signal providing information concerning safe crane operation when said lifted load is equal to or more than said rated load.

3,854,129

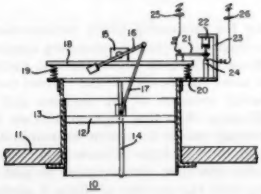
INFRASONIC INTRUSION DETECTION SYSTEM

Frederick R. Haselton, 1205 Fallsmead Way, Rockville, Md. 20854

Filed July 19, 1973, Ser. No. 380,798

Int. Cl. G08b *13/16*

U.S. Cl. 340—276 **10 Claims**



1. An infrasonic intrusion detector for use in a confined space comprising

a. means for generating alternating infrasonic over and under pressure variations within a confined space, said pressure alternating with respect to ambient exterior pressure,

b. means responsive to the atmospheric resistance encountered by said generating means as said generating means generates pressure variations within said protected volume,

c. detector means for detecting any change in the atmospheric resistance encountered by said responsive means,

d. alarm means activated by said detecting means to provide an alarm signal upon a change in said resistance.

3,854,130

POLYCHROMATIC GRAPHIC VISUAL DISPLAY AND CONTROL SYSTEM ASSEMBLY

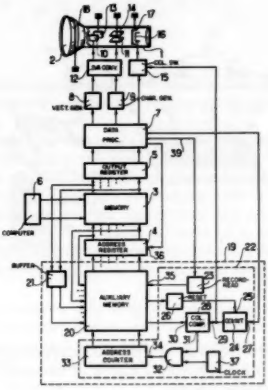
Philippe Ligocki, Creteil, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed May 18, 1973, Ser. No. 361,493

Claims priority, application France, May 19, 1972, 72.18013; Sept. 1, 1972, 72.31146

Int. Cl. G06f *3/14*

U.S. Cl. 340—324 AD **14 Claims**



1. Polychromatic graphic visual display assembly comprising:

a polychromatic cathode tube having a screen for receiving traces having portions of various colors, the traces being renewed in successive cycles;

a main memory means including a memory block, an address register and an output register from which graphic data items entered into the memory are extracted, the main memory means for each portion of traces recording a group of data items relating to that portion, the group of data items being classified in the memory means in a group of addresses, the first of the data items relating to the color of the portion and being classified as a first color change address in the group of addresses, the other data items relating to the parameters of the vectors constituting the portion being classified at following addresses in the group of addresses;

data processing means for enabling the generation of the traces on the screen of the cathode tube in response to the output register;

vector generator means and character generator means responsive to the data processing means for influencing a cathode beam deflection control element means so as to make traces and characters appear on the screen;

means for causing changes in color of the portions of traces in response to said data processing means; and

color change address selecting means responsive to said memory block and said address register thereof for listing the color change addresses of the various color groups and recording the corresponding color data thereof, the color change address selecting means selecting in se-

quence one of the various colors and controlling the reading of the main memory means for extracting successively from the main memory means all of the data corresponding to the groups of addresses of the main memory means containing identical color data for the selected color so as to extract the data corresponding to the various colors in sequence.

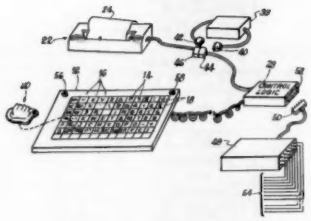
3,854,131
AUTO-MONITORING COMMUNICATION DEVICES FOR HANDICAPPED PERSONS

Greg C. Vanderheiden, 1323 Randall Ct., Madison, Wis. 53715; David F. Lamers, 8943 Robin Dr., Des Plains, Ill. 60016; Chris Daniel Geisler, 138 Lothrop St., and Andrew M. Volk, 1240 Sweetbriar Rd., both of Madison, Wis. 53705

Filed Apr. 23, 1973, Ser. No. 353,462

Int. Cl. G08c *1/00*

U.S. Cl. 340—365 L **11 Claims**



1. A communication device for handicapped persons,
comprising a panel having a matrix of communication elements disposed thereon,
a matrix of sensors disposed adjacent said panel and corresponding with the matrix of communication elements,
a cursor movable along said panel in a sliding fashion into alignment with each of said communication elements to select such element,
said cursor including means for operating the sensor corresponding to the selected communication element,
output means for producing a particular communications output in response to the operation of each of said sensors,
and delay means responsive to the operation of said sensor for delaying the production of such output following the operation of each of said sensors,
said delay means being effective to prevent the production of an output until said cursor remains in an operative relationship to any particular sensor for a predetermined amount of time.

3,854,132
RADAR SYSTEMS

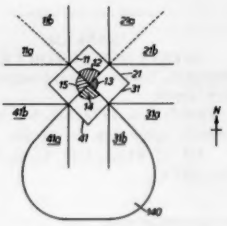
Eric Davies, Danbury, England, assignor to The Marconi Company, Limited, Chelmsford, Essex, England

Continuation-in-part of Ser. No. 161,288, July 6, 1971, abandoned. This application May 21, 1973, Ser. No. 362,396

Int. Cl. G01s *9/02*

U.S. Cl. 343—5 PD **18 Claims**

1. A within-pulse radar system including a plurality of transmitting aerials each positioned to transmit a pulse of energy into a separate sector of an area of surveillance and a plurality of receiving aerial arrays each positioned to survey an area which includes substantially half of one sector into which a pulse of energy is transmitted by one of said transmitting aerials and an adjacent half of a second sector into which a



pulse of energy is transmitted by a second one of said transmitting aerials.

3,854,133
ELECTRO-MAGNETIC DISTANCE MEASURING APPARATUS

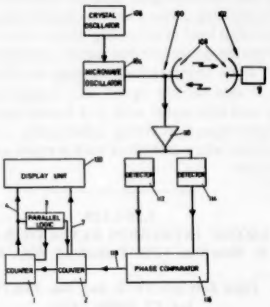
Paul Joseph Cabion, Johannesburg, South Africa, assignor to South African Inventions Development Corporation, Pretoria, South Africa

Filed May 29, 1973, Ser. No. 364,285

Claims priority, application South Africa, May 29, 1972, 72/3648

Int. Cl. G01s *9/04*

U.S. Cl. 343—12 R **9 Claims**



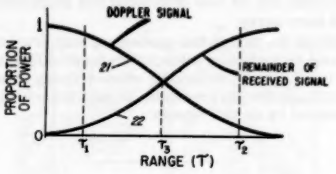
1. A device for processing phase measurements obtained from electro-magnetic distance measuring apparatus yielding successive phase difference measurements each having one digit with the same significance as the current most significant digit in a partial measure of the distance and one digit of greater significance than that digit to indicate the final distance, comprising means to accept measurements from the measuring apparatus, means to accumulate those measurements and after the first measurement to add in a modulo corresponding with the number of digits in a phase measurement and at the weight of the current most significant digit in the partial measure a correcting quantity to each measurement to allow for error in the measurement, means to control the accumulating means so that correcting quantity is a predetermined quantity minus the current most significant digit in the partial measure of distance, and means to indicate the final distance.

3,854,134

RADIO RANGING UTILIZING DOPPLER SIGNALS

Raymond C. Johnson, Jr., Gainesville, Fla., and Salvador J. Peperone, Silver Spring, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 28, 1966, Ser. No. 607,595
Int. Cl. G01s 9/24
U.S. Cl. 343—14 6 Claims



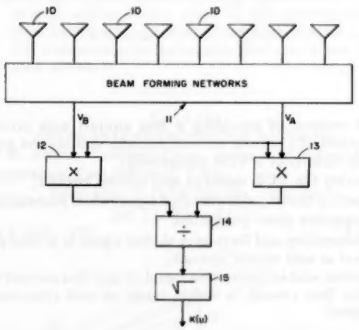
1. A radio ranging system comprising means for radiating a CW-FM radio signal, means for receiving a portion of said signal as reflected by an object, means for mixing the received signal with the signal being radiated to obtain the difference frequency signal thereof, and means for measuring the proportion of Doppler signal power in said difference frequency signal.

3,854,135

LOW ANGLE RADAR TRACKING SYSTEM

Warren D. White, Northport, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 9, 1973, Ser. No. 414,465
Int. Cl. G01s 9/22
U.S. Cl. 343—16 M 8 Claims



1. In a method for determining by radar the elevation angle of a target which is at a relatively low altitude so that both direct and reflected radar signals are returned to the radar site, the steps of

receiving said direct and reflected radar signals on a pair of directional beams which have patterns and are orientated such that their ratio has even order symmetry with respect to a horizontal axis; and

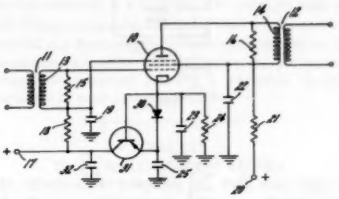
determining the ratio of the signals received on said pair of directional beams, said ratio being indicative of said elevation angle.

3,854,136

CIRCUIT FOR FAST RECOVERY FROM JAMMING IN A RADAR RECEIVER SYSTEM WITH LARGE DYNAMIC RANGE

Keefer S. Stull, Jr., Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 5, 1964, Ser. No. 365,570
Int. Cl. G01s 7/28, 7/36
U.S. Cl. 343—18 E 9 Claims



6. A circuit coupled to the intermediate frequency circuit of a radar receiver to provide fast recovery from jamming signals comprising:

an intermediate frequency pentode amplifier, having an input coupled to the control and suppressor grids and an output coupled to the screen grid and anode, and having a cathode coupled to a neutral potential through a parallel resistance and first capacitance network;

a diode and a second capacitor coupled in series between said cathode and said neutral potential, said diode being oriented with the anode thereof coupled to said cathode; and

a PNP transistor switching circuit having a base intput thereto coupled to said pentode cathode, an emitter input thereto coupled to the cathode of said diode, and collector output means coupled to a biasing voltage whereby, upon the occurrence of a jamming signal on the input to said pentode, the cathode voltage thereof will rise in accordance with the charging rate of said second capacitor preventing pentode saturation for a jamming pulse time interval and allowing real target signals to be amplified and, upon reduction of a jamming signal on the input to said pentode, the cathode voltage thereof will decrease producing a voltage differential across the inputs of said transistor switching circuit to switch same into conduction and reduce the second capacitor voltage as rapidly as said jamming signal to immediately relieve back-bias on said pentode allowing real target signals to be amplified.

3,854,137

DIRECTION DETERMINING METHOD

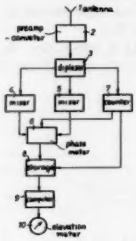
Karl Kohler, Heimerdingen, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Jan. 26, 1972, Ser. No. 220,982
Claims priority, application Germany, Jan. 26, 1971, 2103580
Int. Cl. G01s 1/44
U.S. Cl. 343—106 D 5 Claims

1. A method of determining direction from a moving receiving station with respect to a ground-based Doppler type radio navigation station, said ground-based station having a reference antenna and a commutated linear array, successive radiators of which are spaced by a linearly increasing distance from said reference antenna comprising the steps of:

measuring at said receiving station, the respective phase difference between the waves successively transmitted by said reference antenna and each of said array radiators, the results of said measurement producing a series of phase values $\beta_1 \ldots \beta \quad \ldots \beta_n$;

and computing a value representative of said direction ϕ' according to the relation
$\sin\phi'' = 2P/[\pi n(2d/\lambda)]$,



where $$P=\sum_{\nu=1}^{\nu=n/2}(\beta_{n-\nu+1}-\beta_\nu),$$

and where n = an even number of radiators, ν = the serial number of the radiator, d = spacing between adjacent radiators, and λ = the transmitted wavelength.

3,854,138

RADIOLOCATION SYSTEM PARTICULARLY ADAPTED FOR AIRCRAFT LANDING SYSTEMS

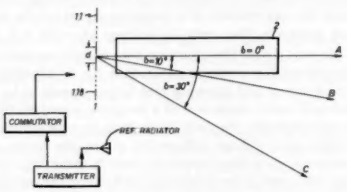
Karl Kohler, Heimerdingen, Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed May 17, 1973, Ser. No. 361,223

Claims priority, application Germany, May 18, 1972, 2224400

Int. Cl. G01s 1/16

U.S. Cl. 343—108 R **3 Claims**



1. A radiolocation system particularly adapted for aircraft guidance in a terminal area and providing an ILS type presentation of air-derived angular guidance information based on group beacon transmissions, which includes a linear array of N substantially identical and substantially equally spaced radiators sequentially and cyclically energized from a transmitter producing signals of substantially constant phase and amplitude, said ground beacon also being arranged to transmit a pulse train prior to each ground beacon radiation cycle, said ground beacon transmitting a reference signal to facilitate remote phase measurements comprising:
a receiver located on said aircraft, said receiver including means responsive to said pulse train for determining the beginning of a ground beacon commutation cycle;
means within said receiver for comparing the amplitude and phase of said reference signal with the amplitude and phase of energy received from each radiator of said ground beacon array energized, to produce a plurality of measured amplitude and phase values;
means for adding said measured values vectorially to form a first vector sum;
means for determining the absolute value of said first sum to produce a value representative of the field strength which a group antenna pattern with a single main lobe would produce along a directional line perpendicular to said linear array at the location of said receiver;
means for shifting one half of the measured values by 180° in phase.
means responsive to said phase shifted measured values and the balance of said measured values in unmodified form for deriving a second vector sum, and for producing the absolute value thereof, said second vector sum absolute value characterizing a double-lobe group pattern with null on said directional line perpendicular to said linear array;
and means for taking the quotient of said first and said second vector sum absolute values for producing a signal having the same variational characteristics about said directional line perpendicular to said linear array as is produced by an ILS system.

3,854,139

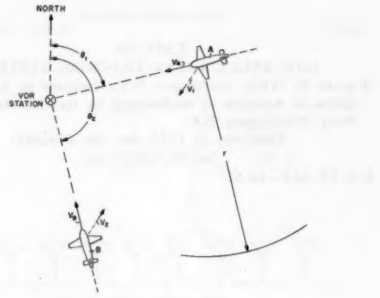
AIRCRAFT PROXIMITY ALERT

Alan H. Rich, 9910 Jacqueline Dr., Oxon Hill, Md. 20022

Filed Oct. 25, 1972, Ser. No. 300,606

Int. Cl. G01s 1/44

U.S. Cl. 343—112 CA **5 Claims**



1. A method of providing a first aircraft with proximity information of a second aircraft wherein said second aircraft is in the vicinity of a VOR comprising:
receiving the VOR signal at said second aircraft;
frequency shifting said received signal while maintaining its respective phase properties;
retransmitting said frequency shifted signal at a fixed power level at said second aircraft;
receiving said retransmitted signal at said first aircraft when said first aircraft is within range of said retransmitted signal.

3,854,140

CIRCULARLY POLARIZED PHASED ANTENNA ARRAY

Joseph C. Ranghelli, Brooklyn, N.Y., and Emmanuel J. Perrotti, Ramsey, N.J., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.

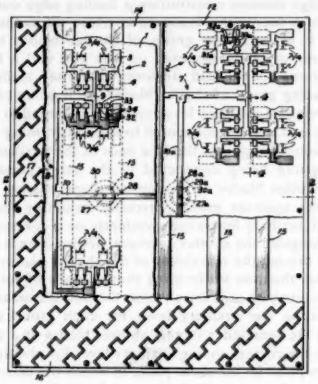
Filed July 25, 1973, Ser. No. 382,619

Int. Cl. H01q 19/00

U.S. Cl. 343—756 **31 Claims**

1. An antenna array comprising:
N linearly polarized dipole elements each having a given orientation, where N is an integer greater than one;

a ground plane superimposed relative to, disposed below and associated with said N elements;
a power distribution network coupled to said N elements;
a polarizer disposed in a superimposed relation to, disposed above and associated with said N elements to provide a circularly polarized antenna beam having a predetermined one of left handed circular polarization and right handed circular polarization; and
a phase shifting arrangement selectively coupled to said distribution network to control said antenna beam to have different selected angular directions;
said N elements including



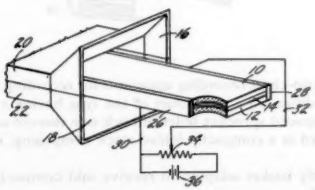
N mat-strip dipole elements printed on a first printed circuit board;
said distribution network including
a mat-strip power distribution network printed on said first printed circuit board; and
said polarizer is printed on a second printed circuit board spaced from said first printed circuit board;
said polarizer including
a plurality of spaced meander lines printed on said second printed circuit board, each of said printed meander lines having a longitudinal axis disposed at an angle of 45° with respect to the longitudinal axis of said N mat-strip elements.

3,854,141

ZOOM INTERFEROMETER ANTENNA

Peter W. Smith, Westport, Conn., assignor to United Atlantic Corporation, East Hartford, Conn.

Filed Aug. 2, 1973, Ser. No. 385,206
Int. Cl. H01q *13/26*
U.S. Cl. 343—777 **5 Claims**



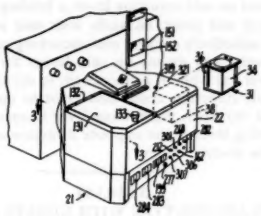
1. A variable sensitivity, surface wave interferometer antenna system comprising:
a pair of surface wave antennas each comprising a surface wave supporting surface comprised of a dielectric material selected from the group consisting of ferroelectric materials and ferromagnetic materials and feed means for launching a surface wave on said wave supporting surface, each of said wave supporting surface structures being adjacent to a conducting reference plane which is between said two structures; and
field means for applying to said material of both said antennas a controllably variable field, selected from the group consisting of electric fields and magnetic fields, said selected field being an electric field in the case where said selected material is a ferroelectric material, said selected field being a magnetic field in a case where said selected material is a ferromagnetic material, thereby to alter the attenuation constant of said antenna, the variation in attenuation constant causing a variation in boresight sensitivity of said antenna system.

3,854,142

DATA RECORDING CAMERA

Ernest M. Whitley, 3061 Stelling Dr., Palo Alto, Calif. 94303; Don L. Beaman, 397 Green Lake Dr., Sunnyvale, Calif. 94086, and William S. McCombie, 871 Rubis Dr., Sunnyvale, Calif. 94087

Division of Ser. No. 213,320, Dec. 29, 1971. This application Mar. 26, 1973, Ser. No. 345,085
Int. Cl. G03b *17/22, 19/02, 17/42*
U.S. Cl. 354—173 **10 Claims**



1. A data recording camera, comprising
a first light-tight housing having a film exposure gate therein,
a supply spindle for holding a supply of film within said first housing,
a shutter in said housing positioned to interrupt light passing from outside said first housing to said gate,
a lens system in said first housing for imaging data at said film exposure gate,
a film advancing mechanism for advancing film from said supply through said gate,
a second light-tight housing for receiving said film after said film passes through said gate, and
a control circuit for controlling the operation of said shutter and said film advancing mechanism comprising,
a timing circuit comprising
a multivibrator having first and second states and producing a first output signal when in said first state and a second output signal when in said second state,
a first delay circuit triggered by said first output signal of said multivibrator and operative after a selected duration of delay, to produce an output signal to trigger operation of said film advancing mechanism and reset said multivibrator to said second state,
a second delay circuit triggered by the output signal of said first delay circuit and operative to first actuate said film advancing mechanism in response thereto and then to terminate said actuation after a selected duration of delay, and

a shutter control circuit responsive to said first output of said multivibrator to close said shutter and to said second output of said multivibrator to open said shutter.

3,854,143

SHUTTER OPERATING MECHANISM

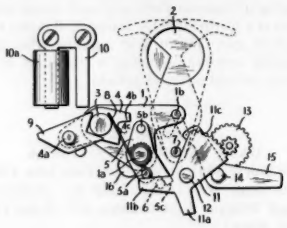
Kiyoshi Kitai, and Yukio Morino, both of Tokyo, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed July 5, 1973, Ser. No. 376,826

Claims priority, application Japan, July 4, 1972, 47-78343

Int. Cl. G03b *9/14*

U.S. Cl. 354—265 **6 Claims**



1. In a camera shutter having shutter blades, the combination of an actuating lever movable for moving the shutter blades between open and closed positions thereof; a pivot pivotally mounting said actuating lever; a driving lever pivotally mounted on said actuating lever; a holding lever pivotally mounted on said pivot, coaxially with said actuating lever; means for selectively cocking and uncocking said holding and driving levers; and means on said levers for enabling said driving lever (a) when it is uncocked, to drive said actuating lever in one direction about said pivot to open the shutter blades and (b) when the holding lever is uncocked, to drive said actuating lever in the opposite direction about said pivot to close the shutter blades.

3,854,144

FOCAL PLANE SHUTTER WITH GROUPS OF SHUTTER BLADES IN IMPROVED ARRANGEMENT

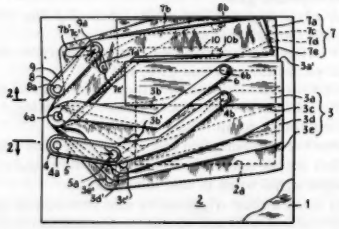
Eiichi Onda, Misato; Mitsuo Koyama, and Tadashi Nakagawa, both of Chiba, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 25, 1973, Ser. No. 400,612

Claims priority, application Japan, Sept. 26, 1972, 47-111776

Int. Cl. G03b *9/36, 9/18*

U.S. Cl. 354—246 **5 Claims**



1. In a focal plane shutter, in combination, a pair of opposed plates defining a space therebetween and each having registering apertures defining a shutter aperture, two groups of shutter blades constituting a first group for opening the shutter aperture normally in a first operative position closing the shutter aperture when the shutter is in a cocked condition and operable to a second operative position opening the shutter aperture, and a second group of shutter blades normally disposed in a first operative position alongside the shutter aperture and operable to a second operative position for closing the shutter to terminate a photographic exposure, each group of shutter blades having a slit-forming shutter blade having a straight edge for travelling across the shutter aperture, the slit-forming shutter blade in the first group of shutter blades constituting a trailing shutter blade and said straight edge thereon constituting a trailing edge controlling defining of an increasing exposure aperture slit as the shutter aperture is opened, the slit-forming shutter blade in the second group of shutter blades constituting a leading shutter blade and said straight edge thereon constituting a leading edge controlling defining of a decreasing exposure aperture slit as the shutter aperture is closed, each group of shutter blades having a driven lever pivotally mounted on one end and a free end thereof connected to said slit-forming shutter blade of the corresponding group of shutter blades, each group of shutter blades having an auxiliary lever pivotally mounted at one end and a free end thereof connected to said slit-forming blade of the corresponding group, the free ends of the auxiliary levers of each group being connected to the corresponding slit-forming shutter blades at a common plane passing through said shutter aperture means, pivotally mounting the driven levers and auxiliary levers independently on a common plane passing alongside the shutter aperture, driving means for each group for driving the remainder of the shutter blades of each group other than the slit-forming shutter blade of each group in conjunction with said driven lever thereof, the means pivotally mounting the auxiliary lever for each group pivotally mounting the remainder of said shutter blades at a common pivot with the corresponding auxiliary lever for pivoting about a common pivot im the same plane in which the driven levers and auxiliary levers pivot, the levers of said first group being a mirror image of the second group and the slit-forming shutter blades of each group being disposed remotest from each other and the remainder of shutter blades of both groups being disposed therebetween.

3,854,145

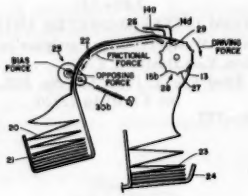
STRIP-CHART RECORDING APPARATUS

A. Lindsay Carroll, Jr., Cohasset, and Melvin J. White, Jr., Sharon, both of Mass., assignors to The Foxboro Company, Foxboro, Mass.

Filed Nov. 28, 1973, Ser. No. 419,754

Int. Cl. G01d *15/30*

U.S. Cl. 346—116 **5 Claims**



1. A strip-chart recording apparatus for recording the value of a condition on a strip-chart of the type having a series of equally spaced sprocket holes at each side thereof and which is supplied in a compactly folded stack comprising, in combination:

a supply basket adapted to receive said compactly folded stack,

a surface aligned with said supply basket to support said strip-chart as it is unfolded from said stack,

said surface being flat in a direction transverse to the move-

ment of said strip-chart and convex in direction of said movement,

a chart roll having its axis of rotation aligned parallel to said flat surface and spaced a distance in the direction of said movement from the end of said surface whereby a section of said strip-chart is suspended between said end and the point of contact with said chart roll,

said chart roll having sprocket teeth at each end thereof adapted to engage said series of equally spaced sprocket holes in said strip-chart.

means for rotating said chart roll at a uniform speed,

a tensioning device biased to exert a force between said strip-chart and said surface at a distance from said end whereby said force and the friction of said strip-chart in contact with said convex surface resists the pull of said sprocket teeth as said chart roll rotates, thereby providing sufficient tension to hold the suspended section of said strip-chart in its unfolded condition substantially flat,

and pen means adapted to record on said suspended section of said strip-chart.

DESIGN PATENTS

GRANTED DECEMBER 10, 1974

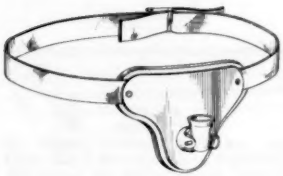
ERRATA

For CLASS	See PATENT NO.
D45–016	D233,906
D56–004	D233,913

DESIGNS

DECEMBER 10, 1974

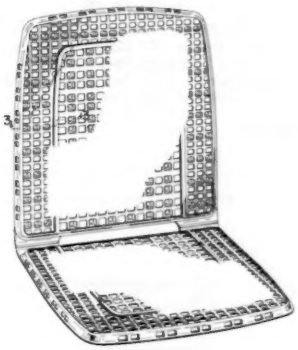
233,865
FISHERMAN'S BELT
Anthony M. Vanus, 105 Brown Drive, Claremont, Calif. 91711
Filed Apr. 27, 1973, Ser. No. 355,159
Term of patent 14 years
Int. Cl. D2—*07*
U.S. Cl. D2—381



233,866
SPORT SHIRT
Vera Naumovski, 60 Roseland Drive, Toronto, Ontario, Canada
Filed Mar. 2, 1973, Ser. No. 337,498
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—208

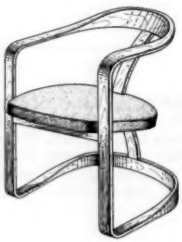
233,867
HASSOCK
Evalin S. Gilbert, 2121 N. Bay Shore Drive, Miami, Fla. 33137
Filed Nov. 20, 1972, Ser. No. 308,040
Term of patent 14 years
Int. Cl. D6—*02*
U.S. Cl. D6—36

233,868
VENTILATED CAR SEAT
Dwight N. Wooters, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Nov. 13, 1972, Ser. No. 306,365
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—48

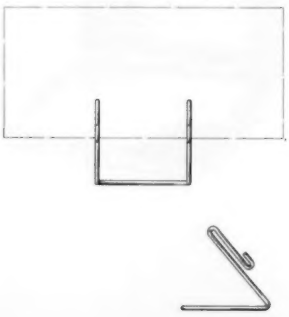


233,869
CHAIR
Leopoldo Lopez-Leautaud, Rio Vistula 339 Ote. Col. Del Valle, Monterrey, Neuvo Leon, Mexico
Filed Apr. 18, 1973, Ser. No. 352,286
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—55

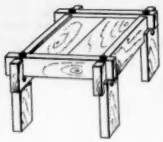
233,870
ARM CHAIR
Richard Goldsmith, 19 Fiske Place, Brooklyn, N.Y. 11215
Filed Mar. 28, 1973, Ser. No. 345,571
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56

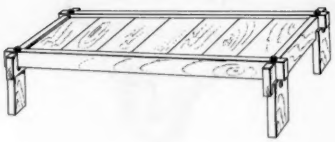


233,871
RECIPE CARD HOLDER
Carl J. Dexter, 130 Hideaway Lane, West Lafayette, Ind. 47906
Filed June 14, 1973, Ser. No. 370,175
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—85

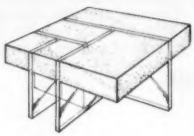


233,872
TABLE
Denis Jester, Tiburon, Calif. (68 Belvedere St. San Rafael, Calif. 94901)
Filed May 4, 1973, Ser. No. 357,334
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177

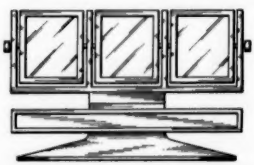




233,873
MODULAR TABLE
Floyd J. Mills, 1285 Briarcliff Road NE., Atlanta, Ga. 30306
Filed Dec. 7, 1972, Ser. No. 312,843
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



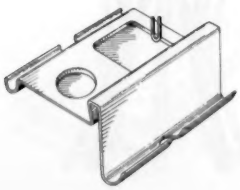
233,874
COMBINED PLURAL PHOTOGRAPH FRAME AND LEGEND DISPLAY
Ravadean Ashley, Newport News, Va. (Quarters 306–B, 26th St., Fort Eustis, Va. 23604)
Filed Apr. 13, 1973, Ser. No. 351,094
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—234



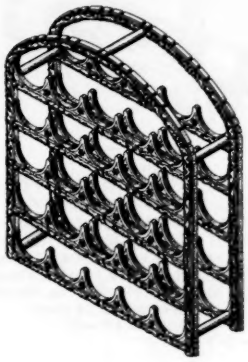
233,875
GOBLET
Harry G. Mazur, Melrose Park, Pa., assignor to DCA Educational Products, Inc., Philadelphia, Pa.
Filed Mar. 12, 1973, Ser. No. 340,415
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—13

233,876
GOBLET
Harry G. Mazur, Melrose Park, Pa., assignor to DCA Educational Products, Inc., Philadelphia, Pa.
Filed Mar. 12, 1973, Ser. No. 340,416
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—13

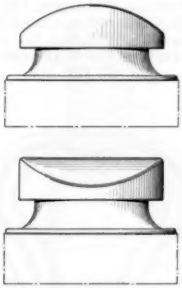
233,877
PORTABLE ATTACHMENT TRAY FOR A DESK DRAWER
Jo Ann P. Sciarrone, 5046 Bayou Vista, Houston, Tex. 77088
Filed Nov. 17, 1972, Ser. No. 307,602
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—38



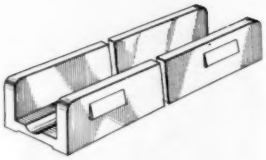
233,878
RACK FOR CONDIMENT HOLDERS
Paula H. Berger, 11752 Skyline Drive, Santa Ana, Calif. 02705, and Jack A. Birnbaum, 400 W. Orangethorpe, #117 A, Fullerton, Calif. 92632
Filed June 1, 1973, Ser. No. 366,031
Term of patent 3½ years
Int. Cl. D7—*06;* D6—*04*
U.S. Cl. D7—71



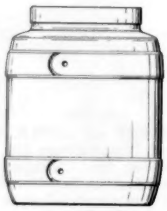
233,879
HANDLE FOR AN APPLICATOR
John R. Howard, West Chicago, Ill., assignor to Turtle Wax, Inc., Chicago, Ill.
Filed June 15, 1973, Ser. No. 370,338
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—178



233,880
PLASTIC HINGE FOR COSMETIC CONTAINERS OR THE LIKE
Roy S. Swenson, Danbury, and Thomas F. Holloway, Beacon Falls, Conn., assignors to The Risdon Manufacturing Company, Naugatuck, Conn.
Filed Apr. 16, 1973, Ser. No. 351,367
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—189

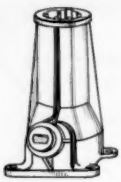


233,881
JAR
James E. Plummer, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Filed Mar. 29, 1973, Ser. No. 346,097
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—162



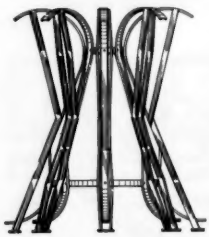
233,882
PACKAGING CUP
David K. Domnitz, Waukegan, Ill., assignor to Kraftco Corporation, Glenview, Ill.
Filed Jan. 23, 1973, Ser. No. 326,049
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—219

233,883
JACK STAND
John A. Van Anrooy, St. Joseph, Mich., assignor to Auto Specialties Manufacturing Company, St. Joseph, Mich.
Filed July 9, 1973, Ser. No. 377,216
Term of patent 14 years
Int. Cl. D12—*05*
U.S. Cl. D12—55

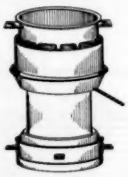


233,884
MOTOR VEHICLE
Frederick M. Stewart, Los Gatos, Calif., assignor to FMC Corporation, San Jose, Calif.
Filed July 24, 1972, Ser. No. 274,681
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—99

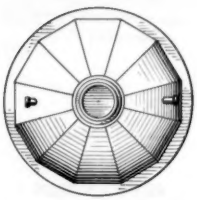
233,885
BICYCLE STAND
Daniel C. Myers, Arvada, Colo., assignor to Daka Industries, Inc.
Filed July 5, 1973, Ser. No. 376,630
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D12—115



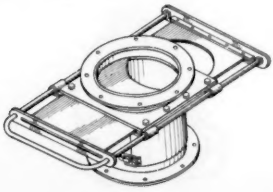
233,886
PORTABLE STILL
Robert R. Hansrote, 4717 Lowell St., Lincoln, Nebr. 68501
Filed Mar. 13, 1972, Ser. No. 234,459
Term of patent 14 years
Int. Cl. D24—*99*; D15—*08*
U.S. Cl. D16—2 B



233,887
SEPTIC TANK
William M. Bower, Suffield, Conn., assignor to Bangor Punta Operations, Inc., Greenwich, Conn.
Filed May 17, 1973, Ser. No. 361,353
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—2

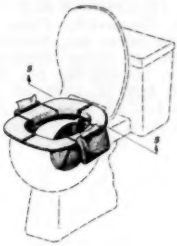


233,888
SLIDE GATE
Karl J. Hnatko, Hibbing, Minn., assignor to Taconite Engineering & Manufacturing Co., Hibbing, Minn.
Filed Oct. 13, 1972, Ser. No. 300,402
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—38

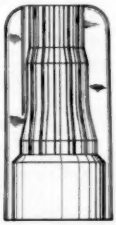


233,889
URINAL FOR PORTABLE TOILET BUILDING
Phillip R. Juaire, Minneapolis, Minn., assignor to Satellite Industries, Inc., Minneapolis, Minn.
Filed Feb. 5, 1973, Ser. No. 329,603
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—68

233,890
COMBINED PORTABLE TOILET SEAT COVER AND DISPOSABLE LINER
Sally J. Smith, 299 Lyons Ave., Newark, N.J. 07112
Filed Dec. 1, 1972, Ser. No. 311,286
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—71



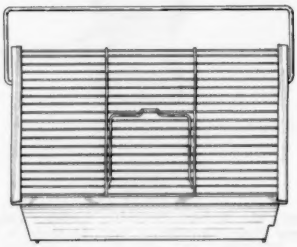
233,891
WIRE CONNECTOR
Rudolph P. Aldighieri, Hackettstown, N.J., assignor to Amerace Corporation, New York, N.Y.
Filed May 7, 1973, Ser. No. 357,810
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—1 C



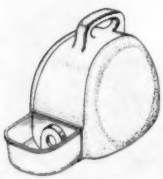
233,892
PUSHBUTTON ELECTRIC SWITCH
Andrew F. Kay, Del Mar, Calif., assignor to Switchpack Systems, Inc., Solana Beach, Calif.
Filed Sept. 15, 1972, Ser. No. 289,760
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D26—13 B

233,893
TELEPHONE SET
Paul Marchese, Greenwich, Conn., assignor to TIE/Communications, Inc., Stamford, Conn.
Continuation-in-part of design applications Ser. No. 378,424, Ser. No. 378,425, Ser. No. 378,426, and Ser. No. 378,427, all July 12, 1973, all now abandoned. This application Jan. 28, 1974, Ser. No. 437,308
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

233,894
PET CAGE
Roy Frederick Perkins, Reigate, England, assignor to Genyk Products, Limited, Mitcham, Surrey, England
Filed Mar. 2, 1973, Ser. No. 337,459
Claims priority, application Great Britain Sept. 15, 1972
Term of patent 14 years
Int. Cl. D30—*02*
U.S. Cl. D30—4



233,895
PET CANTEEN
Joseph C. Mineo, Los Angeles, Calif.
(6735 Shoup Avenue, Canoga Park, Calif. 91304)
Filed Oct. 19, 1972, Ser. No. 299,150
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—13



233,896
GORILLA FIGURE TOY
Fred Kort, Los Angeles, Calif., assignor to Imperial Toy Corporation, Los Angeles, Calif.
Filed Apr. 11, 1973, Ser. No. 350,050
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—2 R

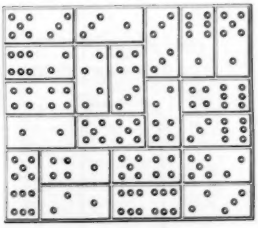
233,897
GOLF BALL POSITION MARKER OR THE LIKE
Walter Rowland Hart, Poole, England, assignor to Jack Smith (Gunmakers) Limited, Poole, Dorset, England
Filed Apr. 11, 1973, Ser. No. 350,018
Claims priority, application Great Britain Oct. 11, 1972
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 CB

233,898
GAME DIE OR SIMILAR ARTICLE
John C. Warren, Exeter, N.H. 03833
Filed Apr. 20, 1973, Ser. No. 352,967
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 DT

233,899
ROTARY AMUSEMENT DEVICE
Jacob W. Burkart, Cincinnati, Ohio, and John F. Mayer, Fort Thomas, Ky., assignors to General Mills Fun Group, Inc.
Filed Apr. 30, 1973, Ser. No. 355,983
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 G

233,900
ANIMAL FACE ACTION TOY
Albert Stubbmann, Franklin Lakes, N.J., assignor to Kohner Bros., Inc., East Paterson, N.J.
Filed Feb. 22, 1973, Ser. No. 334,544
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 B

233,901
PEG BOARD PUZZLE
George Castanis, 444 6th Ave., New York, N.Y. 10011
Filed Feb. 26, 1973, Ser. No. 335,613
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 M



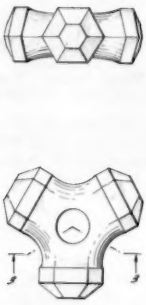
233,902
TOY VISUAL EFFECT DEVICE
Kenneth S. Marks, 1315 Sandberg, Chicago, Ill. 60610
Filed Mar. 30, 1973, Ser. No. 346,623
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 A

233,903
BUBBLE BLOWING WAND
Fred Kort, Los Angeles, Calif., assignor to Imperial Toy Corporation, Los Angeles, Calif.
Filed Nov. 1, 1973, Ser. No. 411,751
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 L

233,904
SURF-BOARD
Folke Dage, Anderstorp, Sweden, assignor to Anderstorps Werkstads AB
Filed Mar. 22, 1972, Ser. No. 237,245
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—42

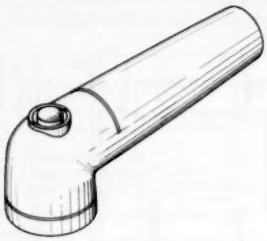
233,905
CIGARETTE LIGHTER
Bernd Figur, Nieder-Roden, Germany, assignor to Rowenta-Werke, GmbH, Offenbach am Main, Germany
Filed Sept. 26, 1973, Ser. No. 400,773
Claims priority, application Germany Mar. 30, 1973
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R

233,906
BEAD
Harold Roger, 370 1st Ave., New York, N.Y. 10010
Filed Sept. 10, 1973, Ser. No. 395,825
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—16 R



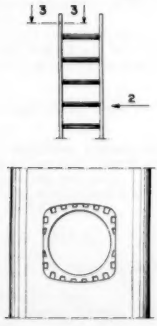
233,907
SCULPTURAL ORNAMENT
Amnon Michaeli, 135—03 73rd Terrace, Queens, Kew Gardens Hills, N.Y. 11415
Filed May 11, 1973, Ser. No. 359,489
Term of patent 14 years
Int. Cl. D26—*99, 01, 05*
U.S. Cl. D48—7 F

233,908
FLASHLIGHT
Robert E. Brindley, New York, N.Y., assignor to Union Carbide Corporation, New York, N.Y.
Filed Mar. 22, 1973, Ser. No. 343,706
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—24 A

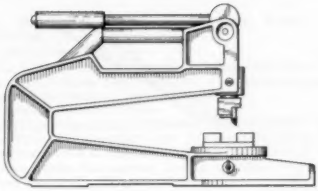


233,909
DIGITAL PANEL METER
Paul E. Brefka, Southboro, Mass., assignor to Analog Devices, Incorporated, Norwood, Mass.
Filed Nov. 8, 1972, Ser. No. 304,648
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R

233,910
LADDER WITH NON-SLIP RUNGS
Leon Gubri, 42 Rue Emile Deschanel, Courbevoie, France
Filed Mar. 26, 1973, Ser. No. 344,495
Claims priority, application France Oct. 26, 1972
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D54—1 A

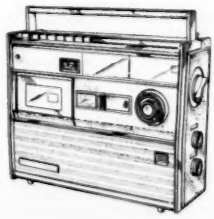


233,911
SHEET METAL LOUVER MAKING DEVICE
Walter G. Marsh, Birmingham, and James J. Rhoades, Westland, Mich., assignors to Topco Products Company, Inc., Detroit, Mich.
Filed Feb. 15, 1973, Ser. No. 332,651
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D55—1 A



233,912
ELECTRONIC FLASH UNIT
Albert L. Nagele, Wilmette, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed June 25, 1973, Ser. No. 373,346
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 F

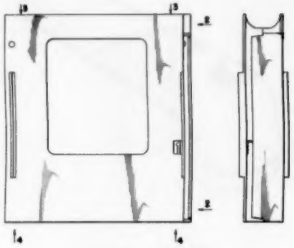
233,913
COMBINED RADIO RECEIVER AND TAPE RECORDER
Takeyoshi Kawano, Kyoto, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Osaka, Japan
Filed June 18, 1973, Ser. No. 371,235
Claims priority, application Japan Dec. 21, 1972
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 B



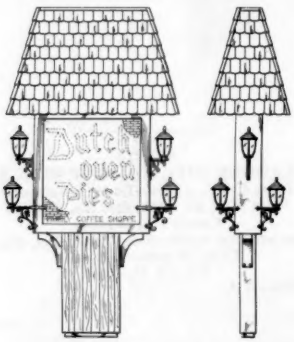
233,914
DISPOSABLE CONTAINER FOR TOPICAL APPLICATION OF FLUID MEDICAMENTS
Claes Peter Lofman, Stockholm, Sweden, assignor to Astra Lakemedel AB, Sodertalje, Sweden
Filed Nov. 8, 1971, Ser. No. 196,862
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 N

233,915
BOLUS GUN FOR CALVES
Orin H. Osborn, Le Sueur, Minn., assignor to International Multifoods Corporation, Minneapolis, Minn.
Filed Jan. 2, 1973, Ser. No. 320,472
Term of patent 14 years
Int. Cl. D24—*02;* D30—*99*
U.S. Cl. D83—12 A

233,916
CASSETTE HOLDER
Roger E. Van Wyngarden, 5806 Rosslyn Ave., Indianapolis, Ind. 46220, and Mark E. Brackemyre, 1117 Dellwood Drive, Mooresville, Ind. 46158
Filed Mar. 30, 1972, Ser. No. 239,836
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 D



233,917
RESTAURANT SIGN
Charles Laughner, 7719 S. Belmont Road, Indianapolis, Ind. 46222
Filed July 31, 1972, Ser. No. 276,515
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D96—12 R



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TO WHOM

PATENTS WERE ISSUED ON THE 10TH DAY OF DECEMBER, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

: *See*—
Buckley, David A.; Jacknow, Burton B.; Mermelstein, Robert; and , 3,853,778.
Watanabe, Teruji; Fukui, Takasuke; Higurashi, Minoru; Sugisaki, Takao; and Ochiai, Tatsushiro, 3,854,086.

Ab Biotex: *See*—
Heden, Carl Goran, 3,853,711.

AB Bygg-Och Transportekonomi (BT): *See*—
Bryntse, Anders Ivar; and Berkestad, Karl-Erik, 3,853,300.

AB Volvo: *See*—
Forssell, Carl Fredrik Johan Sigvard, 3,853,296.

Abbott Laboratories: *See*—
Prasad, Raj Nandan; and Stein, Herman Hal, 3,853,846.

Abegg & Reinhold Co.: *See*—
Boyadjieff, George I.; and Otsap, Ben A., 3,853,175.

Abell, Andrew T. Portable electric hand drill accessory. 3,853,420, Cl. 408-14.000.

Abercrombie, William F., Jr.: *See*—
Price, Charles R.; and Abercrombie, William F., Jr., 3,853,984.

Abercrombie, William F., Jr.; Trowbridge, Frank R.; and McCook, Norman Lary, to Huber, J. M., Corporation. Method for improving brightness of kaolinite clays including iron pyrites. 3,853,983, Cl. 423-113.000.

Abex Corporation: *See*—
Thruston, David L., 3,853,139.

Acda, Petrus Marinus, to Polva-Nederland N.V. Device for shaping a bell end of a tube. 3,853,450, Cl. 425-393.000.

Achelpohl, Fritz, to Windmoller & Holscher. Process and apparatus for making crossed-end bags from weldable material. 3,853,040, Cl. 93-35.00r.

Ackerman, James H., to Sterling Drug Inc. Anilin acids of 3-substituted 2,4,6-triiodoanilines. 3,853,965, Cl. 260-516.000.

Acorn Engineering Company: *See*—
Morris, Earl Lavern, 3,852,834.

Adams, Guy; and Defilippis, Joseph, to Solitron Devices, Inc. Solid state ignition. 3,853,108, Cl. 123-148.00e.

Adams, Guy E.: *See*—
Friedman, Benjamin; and Adams, Guy E., 3,854,119.

Adams, John Howard, to Chevron Research Company. Lubricant containing alkali metal borate dispersed with a mixture of dispersants. 3,853,772, Cl. 252-18.000.

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Adler, Fred P.; and Craven, William A., Jr., to Hughes Aircraft Company. Heat or light source tracking device. 3,853,405, Cl. 356-152.000.

Aerodyne Development Corporation: *See*—
Gordon, Mack; and Phillippi, John F., 3,853,508.

Afanador, Carlos P.; and Jones, Richard L., to Dayton-Walther Corporation, The. Method of making a knuckle assembly. 3,852,872, Cl. 29-447.000.

Agata, Isao; Noguchi, Shunsaku; and Tanaka, Kunihiro, to Chinoin Pharmaceutical and Chemical Works Ltd. Process for producing pyrimidine derivatives. 3,853,871, Cl. 260-251.00a.

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Rioux, Christian; and Lucidarme, Jean, 3,854,065.

Agfa-Gevaert: *See*—
Depoorter, Henri; and Moelants, Felix Jan, 3,853,563.

Ahmed, Mahmoud: *See*—
Thummler, Fritz; and Ahmed, Mahmoud, 3,853,537.

Ahn, Junghi; Schwartz, Bernard; and Wilcox, David L., to International Business Machines Corporation. Multilayer circuits. 3,852,877, Cl. 29-625.000.

Aigami, Koji: *See*—
Ishiai, Tamio; Aigami, Koji; Nishii, Tasaku; and Saito, Masahiro, 3,853,652.

Aiki, Takashi: *See*—
Shimizu, Shozo; Shinohara, Hiroshi; Asai, Junichi; Aiki, Takashi; Hirota, Kuniomi; and Kishi, Toashi, 3,853,597.

Air Products and Chemicals, Inc.: *See*—
Bechara, Ibrahim S.; and Holland, Dewey G., 3,853,818.
Cross, Willis J., Jr., 3,853,483.

Airco, Inc.: *See*—
Cibulka, Anthony B., 3,853,147.

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Nye, Dudley D., Jr.; Carlson, Peter J.; and Keith, Arley, Jr., 3,854,058.

Aisin Seiki Kabushiki Kaisha: *See*—
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Aizawa, Hiroshi: *See*—
Ogiso, Mitsutoshi; Aizawa, Hiroshi; and Kozuki, Susumu, 3,853,396.

Akayama, Jinichi: *See*—
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Akimtsev, Anatoly Alexeevich: *See*—
Kestner, Olga Evgenievna; Vinokurov, Vasily Ivanovich; Axenova, Irina Petrovna; Ozemblovskaya, Galina Tadeushevna; Shakhpenderian, Amayak Pogosovich; Shagurin, Anatoly Zlexeevich; Popova, Larisa Nikolaevna; Zverev, Ivan Ivanovich; Kokonin, Sergei Sergeevic; Matveev, Anatoly Alexandrovich; Petrunin, Alexandr Mikhailovich; Sherstnev, Ebgeny Sergeevich; Akimtsev, Anatoly Alexeevich; Oblasti, Balashikha Moskovskoi; and Sklyarov, Nikolai Mitrofanovich, 3,853,493.

Akin, Robert J.; Altenburger, Otto; and Bansemir, Robert H., to Stromberg-Carlson Corporation. Call back arrangement. 3,854,014, Cl. 179-18.0bg.

Aktiebolaget Electrolux: *See*—
Amren, Jan Vilhelm, 3,853,138.
Asplund, Ivar, 3,853,086.

Aktiebolaget Overums Bruk: *See*—
Bergman, Carl-Axel Leopold, 3,854,063.

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Greven, Hendrik Marie, 3,853,836.
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Albinson, Don C.; Stephens, William I.; Cawley, Charles R., Jr.; and Hopkins, Richard Baier, to Knoll International, Inc. Support bracket. 3,853,294, Cl. 248-235.000.

Albright, Charles Jere; and Fitch, Clifford E., Sr., said Albright assor. to Chemetron Corporation, mesne. Apparatus for cooking food in hot non-aqueous liquids under pressure. 3,853,044, Cl. 99-330.000.

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Brown, John Alexander; and Rhedey, Paul, 3,853,793.

Aldag, David B., to Panhandle Eastern Pipe Line Company. Bearing failure indicator. 3,853,087, Cl. 116-114.00r.

Alden Press, Inc.: *See*—
Koenig, Lowell; and Presco, Albert, 3,853,558.

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Garcea, Giampaolo; and Volontieri, Aldo, 3,854,053.

Alleaume, Jean, to Technigoaz. Antirolling and antipitching supporting method and device for a tank during transportation. 3,853,240, Cl. 220-15.000.

Allen, Earle E., Jr.; Smit, James A.; Walter, Robert R.; and Jansma, Roger H., to Nalco Chemical Company. Sizing process and material. 3,853,609, Cl. 117-155.0ua.

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Barrett, Joseph J., 3,853,404.
Chandrasekaran, Swayambu, 3,853,811.

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Akin, Robert J.; Altenburger, Otto; and Bansemir, Robert H., 3,854,014.

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Aluminum Company of America: *See*—
Kondis, Thomas J., 3,853,542.
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Alvino, William M.: *See*—
Edelman, Leonard E.; and Alvino, William M., 3,853,813.

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Weinshenker, Ned M.; and Andersen, Niels H., 3,853,854.

Ambrose, Jere B., to Northern Fibre Products Corporation. Seat bun fastening strip. 3,853,352, Cl. 297-452.000.

Amelio, Gilbert F.; and Salsbury, Phillip J., to Fairchild Camera and Instrument Corporation. Self-aligned implanted barrier two-phase charge coupled devices. 3,853,634, Cl. 148-1.500.

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Mutchler, Paul A., 3,853,456.
York, Jimmie D., Jr., 3,853,519.

American Cyanamid Company: *See—*
Bernady, Karel Francis; Floyd, Middleton Brawner, Jr.; Poletto, John Frank; Schaub, Robert Eugene; and Weiss, Martin Joseph, 3,853,951.
McGarry, Frederick Jerome; and Suen, Tzeng Jiueq, 3,853,690.
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Williams, Laurence Lyman; and Coscia, Anthony Thomas, 3,853,816.

American Hoist & Derrick Company: *See—*
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American Home Products Corporation: *See—*
Santilli, Arthur A.; and Scotese, Anthony C., 3,853,864.
Wei, Peter H. L.; and Bell, Stanley C., 3,853,872.
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American Shoe Machinery Corporation: *See—*
Schindler, Herbert; and Loffler, Tilo, 3,852,841.

American Shower Door Co., Inc.: *See—*
Laby, Jordan M., 3,852,916.

Ammco Tools, Inc.: *See—*
Mitchell, Wallace F., 3,853,517.

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Jones, Loyd W., 3,853,753.

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Baker, Steven Clark, 3,853,380.
Dola, Frank Peter, 3,854,001.
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Morningstar, Leroy Jack, 3,853,381.
Munro, Geoffrey Hector James, 3,852,878.
Reynolds, Charles Edward; and Woolley, Harold Oakley, Jr., 3,854,018.

Amren, Jan Vilhelm, to Aktiebolaget Electrolux. Method and apparatus for conveying liquid through a long conduit. 3,853,138, Cl. 137-1.000.

Amsted Industries, Incorporated: *See—*
Metzger, Nelson D., 3,853,228.

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Lehman, James E.; and Lush, John S., 3,853,213.

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Anderson, Carl C.; and Sturni, Lance C., to PPG Industries, Inc. Method of preparing a cationic acrylic electrodepositable interpolymer. 3,853,803, Cl. 260-29.6ta.

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Andreev, Vladimir Ivanovich: *See—*
Vainshtein, Boris Iosifovich; Zimin, Alexandr Vasilievich; Chernyshov, Evgeny Andreevich; Kurek, Margarita Evgenievna; Polivanov, Alexandr Nikolaevich; Bogovtseva, Ljudmila Petrovna; Starodubtsev, Eduard Sergeevich; Masljukov, Anatoly Ivanovich; Andreev, Vadimir Ivanovich; Ezerets, Miron Aronovich; and Zorov, Boris Ivanovich, 3,853,726.

Andrews, Harry N.: *See—*
Frisch, Erling; and Andrews, Harry N., 3,853,699.

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Eichelsheim, Alexander Victor, 3,853,368.

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Aqua-Chem. Inc.: *See—*
McClory, Robert M., 3,853,761.

Arcall Limited: *See—*
Wilson, Ian Mayor; and Hamp, Eric William, 3,852,936.

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Barnhart, Nelle S. Sun visor extension for vehicle. 3,853,370, Cl. 296-97.00c.
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Bond, Edwin Marshall, to Chicago Bridge & Iron Company. Traveling bridge with power-cable reel rotated in response to bridge movement, sliplessly and with uniform tension. 3,853,209, Cl. 191-12.20r.

Bonntile Co., Ltd., The: *See*—
Nishida, Hiroshi; Tanaka, Satoshi; Hatanaka, Akiyoshi; Yoneyama, Akira; and Yamanishi, Masafumi, 3,853,577.

Booth, Jack J.: *See*—
Branch, William C.; and Booth, Jack J., 3,853,245.

Boothe, Clyde O.; Culbert, Robert M.; and Farr, Richard S., to Farr Company. Pleated air filter cartridge. 3,853,529, Cl. 55-499.000.

Bortnick, Newman M.; Niederhauser, Warren D.; and Smiley, Leonard H., to Rohm & Haas Company. Vinyl halide polymer impact modifier. 3,853,968, Cl. 260-876.00r.

Bosch, Robert, Elektronik GmbH: *See*—
Fila, Jurgen; and Kwiatkowski, Joachim, 3,853,393.

Bosch, Robert, Fernsehanlagen GmbH: *See*—
Flasche, Gunter; and Tretner, Werner, 3,853,374.

Bosch, Robert, G.m.b.H.: *See*—
Conzelmann, Gerhard; and Kugelmann, Adolf, 3,854,105.
Esper, Friedrich J.; and Zeller, Robert, 3,853,551.
Esper, Friedrich Josef; and Zeller, Robert, 3,853,642.
Wahl, Josef; and Wessel, Wolf, 3,853,103.

Bottorff, Edmond M.: *See*—
Jackson, Billy G.; Stamper, Martha C.; and Bottorff, Edmond M., 3,853,863.

Bourne, Henry A., Jr.; and Schroeder, Rondon L., to Continental Oil Company. Launch tube for a long hole drilling apparatus. 3,853,182, Cl. 173-33.000.

Bourns, Inc.: *See*—
Sparks, James E., 3,854,055.

Bourquin, Jean-Pierre; Schwarb, Gustav; and Waldvogel, Erwin, to Sandoz Ltd.; a/k/a Sandoz AG. 9- or 10-Halo-4H-benzo[4,5]cyclohepta[1,2-b] thiophen-4-ones. 3,853,915, Cl. 260-332.30p.

Boyadjieff, George I.; and Otsap, Ben A., to Abegg & Reinhold Co. Remotely operated well safety valves. 3,853,175, Cl. 166-72.000.

Boyd, James W., to Packaging Corporation of America. Pad for cushion packing fragile articles. 3,853,221, Cl. 206-521.000.

Brack, Alfred; and Psaar, Hubertus, to Bayer Aktiengesellschaft. Benz-[e,d]-indolium dyestuffs. 3,853,913, Cl. 260-326.900.

Brady, William A.: *See*—
Reiner, Lawrence L.; and Brady, William A., 3,853,324.

Braginetz, Paul A.; and Risher, Frederick L., to Morris, Philip, Incorporated. Apparatus for limiting shaving geometry variation in safety razors. 3,852,880, Cl. 30-77.000.

Branch, William C.; and Booth, Jack J. Beverage dispenser. 3,853,245, Cl. 222-144.500.

Brand, Albert H.; and Rao, K. Jagan Moran, to Technicon Instruments Corporation. Electrode structure for potentiometric sample analysis. 3,853,732, Cl. 204-195.00f.

Braun, Anton. Free piston engine with antiknock means. 3,853,100, Cl. 123-46.00r.

Braunhut, Harold N. Aquatic baseball game. 3,853,317, Cl. 273-88.000.

Braunschweigische Maschinenbauanstalt: *See*—
Backofen, Hans-Dieter; and Dittmann, Dietrich, 3,853,615.

Brechbuehler, Hans Ulrich: *See*—
Herzog, Alexis; and Brechbuehler, Hans Ulrich, 3,853,868.

Bremm, Friedrich, to Messerschmitt-Bolkow-Blohm GmbH. Drive gearing for folding aircraft wings. 3,853,290, Cl. 244-46.000.

Brenner, I. Edward. Tear resistant matrix confining band and retainer for use therewith. 3,852,885, Cl. 32-63.000.

Brenner, L. Martin; and Loev, Bernard, to Smithkline Corporation. N-aminomethyl-2-amino(and 2-amino-methyl)-2-heterocyclic-thioacetamides. 3,853,865, Cl. 260-246.00b.

Breston, Michael P.: *See*—
Mott, James D., 3,853,177.

Bretschneider, Hermann: *See*—
Hellerbach, Joseph; Walser, Armin; Bretschneider, Hermann; and Rudolph, Werner, 3,853,953.

Breuer, Hans; Gebhart, Josef; and Robock, Klaus, to Bergwerksverband GmbH. Measuring the dust concentration in air. 3,854,045, Cl. 250-341.000.

Brevko, Robert: *See*—
Bitsura, Michael P.; Brevko, Robert; and Palmer, Merle A., 3,852,937.

Brewton, Lee K.: *See*—
McAmis, Kenneth Wayne; Brewton, Lee K.; and Gentry, Bobby C., 3,852,875.

Bridge, Frank; and Singh, Tej Kuldip. Footwear. 3,852,897, Cl. 36-44.000.

Briggs, Warren Stanley: *See*—
Warthen, John Lawrence; Briggs, Warren Stanley; and Ciapetta, Frank George, 3,853,789.

Bristol-Myers Company: *See*—
Monkovic, Ivo; and Lambert, Yvon, 3,853,889.

British Iron and Steel Research Association, The: *See*—
Wright, Harold; and Jones, Keith Thomas, 3,853,274.

British Petroleum Company Limited, The: *See*—
Behling, Rolf-Dieter; Oelsner, Manfred; and Zenke, Gunther, 3,853,799.
Champagnat, Alfred; and Laine, Bernard Maurice, 3,853,704.
Desty, Denis Henry; and Young, Christopher John, 3,853,457.
Oelsner, Manfred Wolfgang; and Zenke, Erich Gunther, 3,853,798.

British Titan Limited: *See*—
Tylko, Jozef Kazimierz, 3,853,536.

Brod, Gerd; Felber, Wilfried; Leistner, Horst; and Morlock, Gerhard, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Powdered stoving lacquer. 3,853,822, Cl. 260-77.5cr.

Broderick, Anthony J.: *See*—
Klaubert, Earl C.; Lavery, Adelbert L.; and Broderick, Anthony J., 3,852,996.

Bronovets, Marat Alexandrovich; Dobychin, Mikhail Nikolaevich; Kragelsky, Igor Viktorovich; and Mikhin, Nikolai Matveevich. Method of determining the frictional and mechanical properties of materials and a device for the realization thereof. 3,852,993, Cl.73-12.000.

Brooke, Alan H.: *See*—
Tu, Peter K. C.; Brooke, Alan H.; and Miller, Frank S., 3,853,518.

Bross, Charles Frederick, to Pennwalt Corporation. Vial capping apparatus. 3,852,941, Cl. 53-317.000.

Brown & Williamson Tobacco Corporation: *See*—
Haslam, Fred; Horsewell, Henry George; and Cannaway, Paul Henry, 3,853,039.

Brown Boveri & Company Limited: *See*—
Friedrich, Edmund; Moself, Josef; Schaumann, Rolf; and Vogelmann, Manfred, 3,853,685.

Brown, Daniel W.: *See*—
Wall, Leo A.; Brown, Daniel W.; and Florin, Roland E., 3,853,828.

Brown, Jack T.; Reduska, William; Hardman, Carl C.; and Pollack, William, to Westinghouse Electric Corporation. High energy density iron-nickel battery. 3,853,624, Cl. 136-25.000.

Brown, John Alexander; and Rhedey, Paul, to Alcan Research and Development Limited. Production of carbon electrodes. 3,853,793, Cl. 252-510.000.

Brown, John J.: *See*—
Hoffa, Jack L.; and Brown, John J., 3,853,008.

Brown, Melanchthon S.; deceased (by Kohn, Gustave K.; administrator). N-Chlorothio ureas. 3,853,966, Cl. 260-545.00r.

Brown, Robert Hulme, to C.A.V. Limited. Speed control for D. C. motors. 3,854,079, Cl. 318-341.000.

Brown, Ted R. Refrigeration system with subcooler. 3,852,974, Cl. 62-79.000.

Brugger, Joseph A.: *See*—
Padjen, George; and Brugger, Joseph A., 3,853,306.

Brunswick Corporation: *See*—
Anderson, Edward P., 3,853,730.

Bryntse, Anders Ivar; and Berkestad, Karl-Erik, to AB Bygg-Och Transportekonomi (BT). Valves for the pressure medium in hydraulic or pneumatic lifting devices. 3,853,300, Cl. 251-120.000.

Bublitz, Donald E.: *See*—
Kurihara, Norman H.; and Bublitz, Donald E., 3,853,901.

Bublitz, Donald E., to Dow Chemical Company, The. N-(alkylthiophenyl) maleimides. 3,853,912, Cl. 260-326.50s.

Bucalo, Louis, to Investors In Ventures, Inc. Implant methods and devices for influencing body fluid. 3,853,116, Cl. 128-1.00r.

Buckley, David A.; Jacknow, Burton B.; Mermelstein, Robert; and , to Xerox Corporation. Toner composition employing polymer with side-chain crystallinity. 3,853,778, Cl. 252-62.100.

Buco, Stephen Nicholas. Stamp album sheets. 3,852,903, Cl. 40-159.000.

Bugaut, Andree: *See*—
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,853,464.

Buisson, Marcel, to Societe d'Etudes et Realisations de Complexes Industriels Divers Impasse des Ventes Marsauceux. Method and device for discharging rubbish and waste through pneumatic ducts. 3,853,355, Cl. 302-2.00r.

Bunker Ramo Corporation: *See*—
Daniel, William C., 3,853,680.
Demichiel, John; and Langer, Arthur, 3,854,074.
Occhipinti, Carl, 3,853,389.

Bunker-Ramo Corporation, The: *See*—
Tuchto, Jeff; and Joseph, Eugene S., 3,854,107.

Burch, John L., to United States of America, National Aeronautics and Space Administration. Automatically operable self-leveling load table. 3,853,075, Cl. 108-136.000.

Burden, Alfred L.: *See*—
Rhodes, Charles W., 3,853,026.

Burford, Bruce Alfred, to Simpson Pope Limited. Height-adjustable griller. 3,853,113, Cl. 126-41.00e.

Burke, Errol J. Explosion-proof pole base means. 3,853,291, Cl. 248-158.000.

Burndy Corporation: *See*—
Lazar, Michael, 3,853,382.

Burnstein, Philip J.: *See*—
Meyer, Richard R.; Kearney, John M.; and Burnstein, Philip J., 3,853,510.

Buscher, Enno; Eils, Friedrich; Jansing, Walter; Kirchner, George; and Markfort, Dieter, to Interatom Internationale Atomreaktorbau GmbH. Apparatus for continuously precipitating liquid metals from gases. 3,853,504, Cl. 55-80.000.

Bush, Billy Ross, to Preload Company, Inc., The. Scaffold and winding apparatus. 3,853,277, Cl. 242-7.210.

Busoni, Rodolfo. Device for distributing hot-melt adhesive. 3,853,410, Cl. 401-1.000.

Byrne, Joseph B.; and Ledbetter, Harvey D., to Dow Chemical Company, The. Composite materials comprising epoxy resin matrix and carbon fibers. 3,853,610, Cl. 117-161.0zb.

Cabion, Paul Joseph, to South African Inventions Development Corporation. Electro-magnetic distance measuring apparatus. 3,854,133, Cl. 343-12.00r.

Cade, Phillip J., to Electronics Corporation of America. Burner control system. 3,854,056, Cl. 307-117.000.

Cadwell, Robert M.; and Rock, Frank C., said Rock assor. to National Controls, Inc. Digital subtraction system and method for determining net weight. 3,853,267, Cl. 235-151.330.

Cagan, Bernard J., to Placo Porducts Company. Combination dart and pinball apparatus. 3,853,318, Cl. 273-102.10g.

California Institute of Technology: *See*—
Yen, Shiao-Ping S.; and Rembaum, Alan, 3,853,804.

Campagnuolo, Carl J.; Peer, Charles F.; and Rawlings, David L., to United States of America, Army. Fluidic arming system. 3,853,066, Cl. 102-70.20g.

Cannaway, Paul Henry: *See*—
Haslam, Fred; Horsewell, Henry George; and Cannaway, Paul Henry, 3,853,039.

Canon Kabushiki Kaisha: *See*—
Inoue, Mutsuhiro; and Inoue, Shunzo, 3,853,401.
Kano, Ichrio, 3,853,398.
Maki, Isamu; and Kiuchi, Masashi, 3,853,554.
Ogiso, Mitsutoshi; Aizawa, Hiroshi; and Kozuki, Susumu, 3,853,396.

Cantarano, Marcus. Devices for reproducing by photoelectric method. 3,853,397, Cl. 355-3.00r.

Canup, Robert E., to Texaco Inc. High frequency continuous-wave ignition energy for an internal combustion engine. 3,853,106, Cl. 123-148.00e.

Cap, Miroslav: *See*—
Vosolsobe, Jan; Dohnalek, Rudolf; Kadlec, Bohumil; Michalek, Jiri; Simecek, Antonin; Cap, Miroslav; and Novak, Miroslav, 3,853,790.

Carborundum Company: *See*—
Baughman, Davis Lee; and Carpenter, James Hugh, Jr., 3,852,919.

Cardinal of Adrian, Inc.: *See*—
MacDonald, Robert D., 3,853,341.

Carella, Richard F. Arrow. 3,853,320, Cl. 273-106.50c.

Caretta, Ferdinando: *See*—
Mezzanotte, Mario; Caretta, Ferdinando; and Turchetti, Gianni, 3,853,163.

Carlile, Hollis B., Jr.: *See*—
Felmann, Ted S.; Carlile, Hollis B., Jr.; and Blankenhorn, Charles F., 3,853,771.

Carlson, Peter J.: *See*—
Nye, Dudley D., Jr.; Carlson, Peter J.; and Keith, Arley, Jr., 3,854,058.

Carpenter, Edwin A., to Allied Tool Products, Inc. Cutting tool. 3,852,859, Cl. 29-96.000.

Carpenter, James Hugh, Jr.: *See*—
Baughman, Davis Lee; and Carpenter, James Hugh, Jr., 3,852,919.

Carroll, A. Lindsay, Jr.; and White, Melvin J., Jr., to Foxboro Company, The. Strip-chart recording apparatus. 3,854,145, Cl. 346-116.000.

Carruba, Samuel C.: *See*—
Gibson, Robert G.; and Carruba, Samuel C., 3,852,969.

Carson, Don B., to Universal Oil Products Company. Vapor-Liquid separation apparatus. 3,853,513, Cl. 55-185.000.

Casadio, Silvano; and Donetti, Arturo, to Instituto de Angeli S.p.A. Certain N-substituted scopolammonium compounds. 3,853,886, Cl. 260-292.000.

Casadio, Silvano; Sclavi, Elvio; and Perego, Roberto, to Etablissements Arpic S.A. Sustained released pharmaceutical compositions. 3,853,988, Cl. 424-22.000.

Cassidy, Paul G. Building raising and underpinning system. 3,852,970, Cl. 61-51.000.

Cast Iron Soil Pipe Institute: *See*—
Gorman, John P., 3,853,140.

Castine, William A., Jr., to PPG Industries, Inc. Packaging device. 3,853,219, Cl. 206-448.000.

Castrignano, Robert A., to Columbia Broadcasting System, Inc. Film stabilizing system for electron beam recorder. 3,854,005, Cl. 178-6.70a.

Caterpillar Mitsubishi Ltd.: *See*—
Yoshizaki, Hirohumi, 3,853,181.

Caterpillar Tractor Company: *See*—
Bertram, August H.; and Gorski, Andrew J., 3,853,419.
Feather, Glen N.; Kiley, Harry M.; and Nelson, William A., 3,853,099.
Hall, Lowell R., 3,853,763.
Luttrell, Richard W., 3,853,231.
Oke, Stanley A. E.; and Shankwitz, Robert F., 3,853,232.
Wineburner, Ronald E., 3,853,303.

Caule, Elmer J. Copper-plastic laminate. 3,853,691, Cl. 161-191.000.

C.A.V. Limited: *See*—
Brown, Robert Hulme, 3,854,079.

Cawley, Charles R., Jr.: *See*—
Albinson, Don C.; Stephens, William I.; Cawley, Charles R., Jr.; and Hopkins, Richard Baier, 3,853,294.

Cebuliak, Steve Edward: *See*—
Westlake, John Henry; Snyder, John Wallace; Leach, Clifford Harvey; and Cebuliak, Steve Edward, 3,853,004.

Cech, Robert E., to Copper Range Company. Method of extracting a metal from a material containing the metal in elemental form. 3,853,353, Cl. 299-2.000.

Celanese Corporation: *See*—
Druin, Melvin L.; and McMahon, Paul E., 3,853,418.
Hou, Kenneth C., 3,853,600.
Mayer, Michael Dainis, 3,852,947.
Smith, James O.; and Delagrange, Carl R., 3,852,946.
Taskier, Henry T., 3,853,601.

Centre Electronique Horloger S.A.: *See*—
Vittoz, Eric Andre; and Fonjallaz, Claude, 3,852,952.

Centro Sperimentale Metallurgico S.p.A.: *See*—
Baudo, Giuseppe; and Bombara, Giuseppe, 3,853,593.

Century Data Systems, Inc.: *See*—
Elliott, Robert Ralph, 3,853,281.

Cesca, Sebastiano: *See*—
Priola, Aldo; Cesca, Sebastiano; and Ferraris, Giuseppe, 3,853,829.

Challier, Jean-Louis; Jeanmart, Claude; and Messer, Mayer Naoum, to Rhone-Poulenc S.A. Pyrrolo(3,4-b)pyridine derivatives. 3,853,880, Cl. 260-268.0bc.

Chamberlin, Earl. Video film projector. 3,853,394, Cl. 352-184.000.

Chambers, Charles W., Jr., to Lorain Products Corporation. Switching circuit for preventing lost calls. 3,854,012, Cl. 179-18.0ad.

Chamois Electronic Manufacturing Company, Inc.: *See*—
Junk, Heinrich J., 3,853,292.

Champagnat, Alfred; and Laine, Bernard Maurice, to British Petroleum Company Limited, The. Cultivation of micro-organisms on a feedstock consisting at least in part of straight chain hydrocarbons. 3,853,704, Cl. 195-28.00r.

Chanaud, Robert Charles: *See*—
Hayden, Richard Earle; and Chanaud, Robert Charles, 3,853,428.

Chandrasekaran, Swayambu, to Allied Chemical Corporation. Flame resistant ethylene-chlorotrifluoroethylene copolymer compositions. 3,853,811, Cl. 260-45.75k.

Chang, Edward H., to Fremont Industries, Inc. Silk screen cleaner composition. 3,853,782, Cl. 252-139.000.

Chaput, Victor B., 1/2 to Simoneau, Alex. Torque transfer drive. 3,852,977, Cl. 64-30.00d.

Chartet, Andre, to Societe Anonyme des Usines Chausson. Method for manufacturing and brazing various apparatuses and particularly heat exchangers. 3,852,873, Cl. 29-487.000.

Chaskin, Harold. Counting system for printed material. 3,853,266, Cl. 235-102.000.

Chauvet, Pierre: *See*—
Berton, Yves; Chauvet, Pierre; Clapit, Stephane; and Fernandez, Nicolas, 3,853,980.

Chemetron Corporation: *See*—
Moore, Donald G.; and Leyers, William E., 3,854,021.
Moore, Donald G., 3,854,022.

Chemetron Corporation, mesne: *See*—
Albright, Charles Jere; and Fitch, Clifford E., Sr. (said Albright assor. to), 3,853,044.

Chen, Ching-Muh: *See*—
Gassmann, Hans-Ulrich; Chen, Ching-Muh; Vermot, Michel; and Stringer, Carl W., 3,853,500.

Chernyshov, Evgeny Andreevich: *See*—
Vainshtein, Boris Iosifovich; Zimin, Alexandr Vasilievich; Chernyshov, Evgeny Andreevich; Kurek, Margarita Evgenievna; Polivanov, Alexandr Nikolaevich; Bogovtseva, Ljudmila Petrovna; Starodubtsev, Eduard Sergeevich; Masljukov, Anatoly Ivanovich; Andreev, Vadimir Ivanovich; Ezerets, Miron Aronovich; and Zorov, Boris Ivanovich, 3,853,726.

Chervenak, Michael C., III: *See*—
Monroe, Paul S.; and Chervenak, Michael C., III, 3,853,507.

Chevron Research Company: *See*—
Adams, John Howard, 3,853,772.
Crocker, Richard E., 3,853,774.
Kohn, Gustave K.; and Singer, Malcolm S., 3,854,000.
Magee, Philip S., 3,853,853.

Chicago Bridge & Iron Company: *See*—
Bond, Edwin Marshall, 3,853,209.

Childress, Bobby B.: *See*—
Leitner, Frank W.; and Childress, Bobby B., 3,854,034.

Childs, William V., to Phillips Petroleum Company. Shallow-bed electrochemical cell. 3,853,737, Cl. 204-270.000.

Chinoin Pharmaceutical and Chemical Works Ltd.: *See*—
Agata, Isao; Noguchi, Shunsaku; and Tanaka, Kunihiro, 3,853,871.

Chioffi, Mario: *See*—
Bertozzi, Marcello; and Chioffi, Mario, 3,853,015.

Chowning, Edward A.: *See*—
Boeglin, Albert F.; Chowning, Edward A.; and Tschappler, Sam E., 3,853,490.

Christen, Urs; and Guidinger, Dewayne Chester, to Varian Associates. Sample container support with cooling means. 3,853,010, Cl. 73-423.00a.

Christensen, Richard G.; and Wahl, Richard, to International Business Machines Corporation. Thin film coating apparatus. 3,853,091, Cl. 118-49.000.

Christian, Daniel: *See*—
Uttrachi, Gerald D.; and Christian, Daniel, 3,854,028.

Christian, Francis R., to Merit Company, The. Casket structure and method of making it. 3,852,856, Cl. 27-6.000.
Christin, Georges Etienne, to Etablissements Bertrand Faure. Vertically adjustable supports for vehicle seats. 3,853,295, Cl. 248-396.000.
Christini, Theodore P.; Flynn, William P.; Inskeep, John B.; and McCauley, Harry J., to Du Pont de Nemours, E. I., and Company. Electroless plating apparatus. 3,853,094, Cl. 118-417.000.
Christopher, John P. Pneumatic apparatus for simultaneously raising a plurality of lobster traps from the bottom to the surface of a body of water. 3,852,908, Cl. 43-102.000.
Chugai Seiyaku Kabushiki Kaisha: *See—*
Mori, Takasi; Takaku, Sakae; and Suzuki, Seikichi, 3,853,919.
Okada, Masanori; Okui, Kiyoshi; Takahashi, Hidenori; and Tanoura, Arata, 3,853,917.
Chvatal, Theodor L., to Owens-Illinois, Inc. Glasses with high content of silver oxide. 3,853,568, Cl. 106-47.00r.
Ciapetta, Carolina: *See—*
Warthen, John Lawrence; Briggs, Warren Stanley; and Ciapetta, Frank George, 3,853,789.
Ciapetta, Frank George: *See—*
Warthen, John Lawrence; Briggs, Warren Stanley; and Ciapetta, Frank George, 3,853,789.
Ciba-Geigy AG: *See—*
Bobinson, Bryan; Stark, Bernard Peter; and Young, Eric Whichell, 3,853,959.
Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,853,841.
Gassmann, Hans-Ulrich; Chen, Ching-Muh; Vermot, Michel; and Stringer, Carl W., 3,853,500.
Habermeier, Juergen; Batzer, Hans; and Porret, Daniel, 3,853,874.
Ciba-Geigy Corporation: *See—*
Bader, Jorg, 3,853,870.
Gschwend, Heinz Werner, 3,853,851.
Herzog, Alexis; and Brechbuehler, Hans Ulrich, 3,853,868.
Holt, Brian, 3,853,890.
Rossi, Alberto, 3,853,892.
Sury, Yel S.; and Grace, Henry C., Jr., 3,853,942.
Cibulka, Anthony B., to Airco, Inc. Respirator flow curve modifier. 3,853,147, Cl. 138-30.000.
Cicione, Robert J.; Najjar, Edward G.; Scanlon, Patricia M.; Ohlson, John L.; and Finn, Joseph F., to Grace, W. R., & Company. Composition and method for producing wrinkle-free permanently pressed cellulosic textile materials. 3,852,829, Cl. 2-243.00r.
Ciraolo, Santo. Support device for marking implements. 3,853,411, Cl. 401-48.000.
Cities Service Company: *See—*
Bendzick, Marvin F., 3,853,451.
Claffie, Bruce A. Letter-name perception and discrimination game apparatus. 3,853,321, Cl. 273-130.00a.
Clapit, Stephane: *See—*
Berton, Yves; Chauvet, Pierre; Clapit, Stephane; and Fernandez, Nicolas, 3,853,980.
Clark Equipment Company: *See—*
McAdams, Paul F., 3,853,019.
Clark, Frank S.; and Fink, Walter, to Monsanto Company. Low pour point fluids and blends containing same. 3,853,776, Cl. 252-46.300.
Clark, Hiram Daniel, III. Flexible motorcycle gearshift. 3,853,020, Cl. 74-560.000.
Clark, Robert L.: *See—*
Pessolano, Arsenio A.; Witzel, Bruce E.; Graham, Patricia M.; Clark, Robert L.; and Shen, Tsung-Ying, 3,853,896.
Witzel, Bruce E.; Shen, Tsung-Ying; Graham, Patricia M.; Clark, Robert L.; and Pessolano, Arsenio A., 3,853,897.
Clark, Wesley D.; and Hollenbeck, Keith E. Disposable needleless injector. 3,853,125, Cl. 128-173.00h.
Clausen, Ib Christian: *See—*
Arfelt, Soren Christian Schoubye; Clausen, Ib Christian; Jensen, Johannes; Fynbo, Knud Hansen; and Fischer, Jean Arnold, 3,853,340.
Claxton, George P.: *See—*
Grisar, J. Martin; and Claxton, George P., 3,853,855.
Clayton, Robert E.; and Vanderbilt, Byron M., to Esso Research and Engineering Company. Rubber bonded to siliceous surfaces. 3,853,692, Cl. 161-193.000.
Cleary, James W., to Phillips Petroleum Company. Preparation of aminobenzenes sulfonate-modified polyamides. 3,853,823, Cl. 260-78.00r.
Clemence, Francois; and Le Martret, Odile, to Roussel-UCLAF. Esters of 2-alkyl thiazole 5-carboxylic acid. 3,853,875, Cl. 260-268.0ph.
Clendenen, Ronald L.: *See—*
Olson, Eugene E.; and Clendenen, Ronald L., 3,853,975.
Clendenin, William H., to General Electric Company. Polyvinyl acetate resin impregnated plastic laminate and process therefor. 3,853,686, Cl. 161-167.000.
Clendinning, Robert A.; Potts, James E.; and Niegisch, Walter D., to Union Carbide Corporation. Shaped biodegradable containers from biodegradable thermoplastic oxyalkanoyl polymers. 3,852,913, Cl. 47-37.000.
Cleveland, Dale P.: *See—*
Sapkus, Jurgis; Lewis, J. Lewis; Piurkowsky, Stephen W.; and Cleveland, Dale P., 3,852,911.
Clevepak Corporation: *See—*
Dunne, Owen F., 3,853,079.
Cline, Joseph A.: *See—*
Sigrud, Donald L.; Fields, Carleton M.; Rickel, Ernest R.; and Cline, Joseph A., 3,852,854.
Clinical Data Services, Inc.: *See—*
Reterson, Ronald Thomas; and Stein, Israel Mayer, 3,853,119.
Clorox Company, The: *See—*
Woodward, Peter K., 3,853,463.
Codding, Harold E.: *See—*
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Colbert, Robert B., Jr., to Wayne-Gossard Corporation. Form fitting lower body garment and method of making same. 3,852,827, Cl. 2-224.00r.
Colclough, Graham Richard, to Phildon Engineering Co. Pty., Ltd. Method and apparatus for processing granular and other materials. 3,853,713, Cl. 195-131.000.
Cole, Lewis C., to United States of America, Army. Device for measuring distance of travel by a projectile. 3,853,062, Cl. 70-2.00r.
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Collmann, Wilhelm. Tire removal apparatus. 3,853,165, Cl. 157-1.200.
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Crim, Walter W. Telephone and electric cord reel. 3,854,017, Cl. 191-12.20r.
Croce, Joesph; and Bayer, Kurt. Retractable leash device. 3,853,283, Cl. 242-107.400.
Crocker, Richard E., to Chevron Research Company. Process for preparing oil-soluble basic magnesium salts. 3,853,774, Cl. 252-33.400.
Cronstedt, Val, to Avco Corporation. Differential gas turbine engine. 3,853,432, Cl. 417-405.000.
Cross, Charles, to Robertshaw Controls Company. Remote station addressing system. 3,854,122, Cl. 340-151.000.
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D'Ambrosio, Birino, to Du Pont de Nemours, E. I., and Company. Continuous filaments and yarns. 3,853,688, Cl. 161-178.000.
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Damon, Clarence Stanley. Alarm system with automatic ringback. 3,854,127, Cl. 340-213.200.
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Daniel, William C., to Bunker Ramo Corporation. Pile faced upholstery fabric. 3,853,680, Cl. 161-67.000.
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Diller, Kenneth. Shipping and carrying container for pots. 3,852,912, Cl. 47-34.110.

Distler, Grigory Isaakovich; Lobachev, Anatoly Nikolaevich; Vlasov, Vasily Platonovich; Melnikov, Oleg Konstantinovich; and Triodina, Nina Sergeevna. Method of growing a single-crystal on a single-crystal seed. 3,853,596, Cl. 117-69.000.

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Dola, Frank Peter, to AMP Incorporated. Cable guide and retainer. 3,854,001, Cl. 174-48.000.

Dollbaum, Wilhelm, to Holtz & Willemsen, G.m.b.H. Continuously operating whirl chamber arrangement. 3,853,047, Cl. 99-473.000.

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Dooley, James L., to McCulloch Corporation, mesne. Method and apparatus starting an internal combustion engine. 3,853,109, Cl. 123-179.00s.

Dorr, Karl-Heinz; Grimm, Hugo; Tacke, Michael; and Peichl, Robert, to Metallgesellschaft Aktiengesellschaft and Sud-Chemie AG. Method of removing SO3 and H2S04 mist from a gas stream. 3,853,502, Cl. 55-48.000.

Dorsey, Denis Peter; Rodda, William E.; and Bahrs, Kenneth Bruce, to RCA Corporation. Switchable video amplifier. 3,854,006, Cl. 178-6.800.

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Dougherty, Gary J.; deceased (by Dougherty, Othilia; executrix); and Prufer, George O. Bale accumulator. 3,853,229, Cl. 214-6.000.

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Drinkard, William C., Jr.; and Lindsey, Richard V., to Du Pont de Nemours, E. I., and Company. Catalytic isomerization of 2-methyl-3-butenenitrile to linear pentene-nitriles. 3,853,948, Cl. 260-465.900.

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Druin, Melvin L.; and McMahon, Paul E., to Celanese Corporation. Safety support for use adjacent a vehicular trafficway. 3,853,418, Cl. 404-1.000.

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Dunne, Owen F., to Clevepak Corporation. Double suction unit. 3,853,079, Cl. 112-218.00r.

Duret, Jean, to Les Cables De Lyon. Electrical connection for aerated insulation coaxial cables. 3,854,003, Cl. 174-88.00c.

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Easterbrook, Norman John. Golfer's practice aid. 3,853,325, Cl. 273-183.00e.

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Edge, Harlan R. Time shaped control arrangement for electrical heaters and method. 3,854,033, Cl. 219-483.000.

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Edwards, Patrick J.: *See*—
Music, John D.; and Edwards, Patrick J., 3,853,169.

Edwards, Philip Neil, to Imperial Chemical Industries Limited. Antibacterial bis(imidazolium quaternary salts). 3,853,907, Cl. 260-309.000.

Eggen, Richard W.: *See*—
Parker, Joseph D.; Hergert, Richard E.; and Eggen, Richard W., 3,853,697.

Egli, Werner H., to Honeywell Inc. Control apparatus. 3,853,013, Cl. 73-505.000.

Eheim, Gunther: *See*—
Wiedenmann, Walter, 3,853,429.

Ehling, Ernest H.; Jackson, Philip C.; and McCarthy, James V., to Instrumentation Engineering, Inc. Automated diagnostic testing system. 3,854,125, Cl. 340-172.500.

Eichelsheim, Alexander Victor, to Applied Power Inc. Hydraulic piston-cylinder device having means for permitting limited reciprocating motion. 3,853,368, Cl. 296-35.00r.

Eilhardt, Bernd: *See*—
Glander, Fritz O.; Rager, Horst; and Eilhardt, Bernd, 3,854,002.

Eils, Friedrich: *See*—
Buscher, Enno; Eils, Friedrich; Jansing, Walter; Kirchner, George; and Markfort, Dieter, 3,853,504.

Eiter, Karl; Hebenbrock, Klaus-Friedrich; and Plempel, Manfred, to Bayer Aktiengesellschaft. Nitrofuran derivatives, their production and use. 3,853,852, Cl. 260-289.30r.

Eklund, Conny: *See*—
Porath, Jerker Olof; Fornstedt, Nermin; Sundberg, Lars; Eklund, Conny; and Axen, Rolf, 3,853,708.

Electronics Corporation of America: *See*—
Cade, Phillip J., 3,854,056.

Electronor Corporation: *See*—
Kolb, James M.; and O'Leary, Kevin J., 3,853,739.
Loftfield, Richard E.; and Jhaveri, Ramesh C., 3,853,738.

Elex Limited AG: *See*—
Huppi, Xaver Johann, 3,853,511.

Elliott, Robert Ralph, to Century Data Systems, Inc. Vacuum tape reel. 3,853,281, Cl. 242-74.000.

Elliott, Ronald C., to ESB Incorporated. Battery having laminated wrapper member which includes gas venting passageway. 3,853,629, Cl. 136-111.000.

Elliott, Stanley B. Method of producing articles from sheet-like material. 3,852,870, Cl. 29-413.000.

Elliott, Willie: *See*—
Sancho, Joseph; and Elliott, Willie, 3,853,333.

Ellis, Myron P.; and Czubak, Albin S., to Micromatic Industries, Inc. Fluid system for honing and plating apparatus. 3,853,734, Cl. 204-212.000.

Elscint Ltd.: *See*—
Suhami, Avraham; and Sabbah, Benjamin, 3,854,047.

Elslager, Edward F.; and Werbel, Leslie M., to United States of America, Army. 2,4-Diamino quinazoline derivatives. 3,853,873, Cl. 260-256.50r.

ELTRA Corporation: *See*—
Sieja, Norman Francis, 3,853,107.

Emhart Corporation: *See*—
Johnson, Lloyd D.; and Raudat, John L., 3,852,942.

Emler, Michael G., to Stromberg-Carlson Corporation. Low voltage monitor circuit. 3,854,089, Cl. 324-96.000.

Endo, Junji: *See*—
Obayashi, Mikio; and Endo, Junji, 3,853,603.

Engebretsen, Einar O., to Hobart Manufacturing Company, The. Compactor with fixed compaction chamber and movable plate member. 3,853,052, Cl. 100-229.00a.

English Clays Lovering Pochin & Company Limited: *See*—
Taylor, Martin, 3,853,488.

Engstrom, Arthur B.: *See*—
Hawkins, Howard C.; and Engstrom, Arthur B., 3,853,253.

Environmental Research Institute of Michigan: *See*—
Horvath, Robert, 3,852,997.

Epps, William R.: *See*—
Amos, Lynn G.; and Epps, William R., 3,853,092.

Erickson Tool Company: *See*—
Benjamin, Milton L.; and Miles, Wilbur N., 3,853,422.

ESB Incorporated: *See*—
Davis, Stuart M., 3,853,623.
Elliott, Ronald C., 3,853,629.

Esco Manufacturing Company: *See*—
McClain, James E., 3,853,375.

Eskridge, Wade A.; and Kennedy, Duane O. Reciprocating fluid motor. 3,853,036, Cl. 91-276.000.

Espenscheid, Wilton F.; and Yan, Tsoung Y., to Mobil Oil Corporation. Stabilization of hydrocracked lube oil by contacting said oil with a catalyst of the ZSM-5 type. 3,853,749, Cl. 208-307.000.

Esper, Friedrich J.; and Zeller, Robert, to Bosch, Robert, G.m.b.H. Method of sintering iron, copper, tin alloys followed by slow cooling. 3,853,551, Cl. 75-227.000.

Esper, Friedrich Josef; and Zeller, Robert, to Bosch, Robert, G.m.b.H. Process for making sintered iron base shaped bodies containing copper and tin with a tempering step followed by slow cooling. 3,853,642, Cl. 148-126.000.

Essenpreis, Philip A.: *See*—
Essenpreis, Philip A.; and Morehouse, Wayne (said Morehouse, Wayne, assor. to said), 3,852,960.

Essenpreis, Philip A.; and Morehouse, Wayne, said Morehouse, Wayne, assor. to said Essenpreis, Philip A. Portable waste disposal system having automatic control means. 3,852,960, Cl. 60-317.000.

Esso Research and Engineering Company: *See*—
Clayton, Robert E.; and Vanderbilt, Byron M., 3,853,692.

Establissements Arpic S.A.: *See*—
Casadio, Silvano; Sclavi, Elvio; and Perego, Roberto, 3,853,988.

Estradier, Francoise: *See*—
Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, 3,853,464.

Etablissements Bertrand Faure: *See*—
Christin, Georges Etienne, 3,853,295.

Etat Francais represent par le Ministre d'Etat charge de la Defense Nationale-Delegation Ministerielle pour l'Armement-Direction Technique des Constructions Navales: *See*—
Barthelemy, Robert Lucien, 3,854,115.

Ethridge, Frederick Allen; Taylor, Michael Paul; and Thompson, Scott Winfield, to Fiber Industries, Inc. Textile fluid crimping apparatus. 3,852,857, Cl. 28-1.300.

Ethyl Development Corporation: *See*—
Marchant, Paul A., 3,853,237.

Etnyre, E. D., & Co.: *See*—
Decker, Jackson; and Russell, Harding M., 3,853,272.

Ettinger, Donald H.; and Zorka, Nicholas G., to USM Corporation. Percussive stud welding system. 3,854,027, Cl. 219-98.000.

Etz, Herbert, to Hahn, Carl, Dr., KG. Apparatus for manufacturing tampons. 3,852,847, Cl. 19-144.500.

Eufusia, Eugene A.: *See*—
Baker, Martin L.; and Eufusia, Eugene A., 3,853,093.

Everett, Robert A. Aerial toy. 3,852,910, Cl. 46-74.00d.

Exploaterings Aktiebolaget T.B.F.: *See*—
Porath, Jerker Olof; Fornstedt, Nermin; Sundberg, Lars; Eklund, Conny; and Axen, Rolf, 3,853,708.

Extracorporeal Medical Specialties, Inc.: *See*—
Miller, Frederick W., III, 3,853,769.

Exxon Research & Engineering Company: *See*—
Plank, Don A., 3,853,810.

Exxon Research and Engineering Company: *See*—
Lahn, Gerard C., 3,853,744.
Welty, Albert B., Jr., 3,853,745.

Ezerets, Miron Aronovich: *See*—
Vainshtein, Boris Iosifovich; Zimin, Alexandr Vasilievich; Chernyshov, Evgeny Andreevich; Kurek, Margarita Evgenievna; Polivanov, Alexandr Nikolaevich; Bogovtseva, Ljudmila Petrovna; Starodubtsev, Eduard Sergeevich; Masljukov, Anatoly Ivanovich; Andreev, Vadimir Ivanovich; Ezerets, Miron Aronovich; and Zorov, Boris Ivanovich, 3,853,726.

Faberge, Incorporated: *See*—
Duncanson, Robert H., 3,852,995.

Fabre, Pierre. Method of coating articles with electrostatically charged particles. 3,853,581, Cl. 117-17.000.

Fahey, Dentis M., to PPG Industries, Inc. Process for applying a coating composition to glass fibers and the resulting coated fibers. 3,853,605, Cl. 117-126.0gb.

Fairbanks, Norman P.; Barb, Raymond P.; and Sutar, William, to General Electric Company. Ni-Au base brazing alloy. 3,853,548, Cl. 75-171.000.

Fairchild Camera and Instrument Corporation: *See*—
Amelio, Gilbert F.; and Salsbury, Phillip J., 3,853,634.

Fake, Charles Sylvester, to Beecham Group Limited. 7-Alkyl-2,2-dimethyl-4-(1-aralkyl-1,2,3,4 -tetrahydro-4-pyridyl)-chroman-5-ols and derivatives thereof. 3,853,899, Cl. 260-297.00b.

Falk, David O.: *See*—
Norton, Charles J.; and Falk, David O., 3,853,802.

Farber, Sheldon, to National Cash Register Company, The. 7-(1-Ethyl-2-methylindol-3-yl)-7-(substituted)-5,7-dihydrofuro (3,4-b)pyrazin-5-one. 3,853,869, Cl. 260-250.0bc.

Farbwerke Hoechst Aktiengesellschaft: *See*—
Herwig, Walter; and Kleiner, Hans-Jerg, 3,853,819.

Fargo Mfg. Company, Inc.: *See*—
Filhaber, Ilmar J., 3,852,850.

Faris, Francis D., to Twisty, Inc. Resilient ring fastener. 3,852,982, Cl. 70-457.000.

Farr Company: *See*—
Boothe, Clyde O.; Culbert, Robert M.; and Farr, Richard S., 3,853,529.

Farr, Richard S.: *See*—
Boothe, Clyde O.; Culbert, Robert M.; and Farr, Richard S., 3,853,529.

Fassbender, Henry J., to Eastman Kodak Company. Photographic diffusion transfer element. 3,853,557, Cl. 96-29.00r.

Feather, Glen N.; Kiley, Harry M.; and Nelson, William A., to Caterpillar Tractor Company. Elastomeric sealing ring for cylinder liners. 3,853,099, Cl. 123-41.820.

Federal Tool & Plastics, a Division of VCA Corporation: *See—*
Ostrowsky, Efrem M., 3,853,236.

Feins, Irvin Ralph; and Lindsley, John Francis. Process for hydrotreating catalyst and product thereby. 3,853,788, Cl. 252-455.00r.

Feins, Irvin Ralph. Process for preparing a hydrodesulfurization catalyst of cobalt oxide and molybdenum oxide on an alumina support and catalyst obtained. 3,853,791, Cl. 252-465.000.

Felber, Wilfried: *See—*
Brod, Gerd; Felber, Wilfried; Leistner, Horst; and Morlock, Gerhard, 3,853,822.

Feldman, Sidney; and Ketts, Harry C., III, to United States of America, Navy. Sextant having night viewing capability and digital readout and portable computer system. 3,854,037, Cl. 235-150.270.

Feller, Peter, to Zellweger, Ltd. Method of, and apparatus for standardizing slivers. 3,852,848, Cl. 19-240.000.

Felmann, Ted S.; Carlile, Hollis B., Jr.; and Blankenhorn, Charles F., to Shell Oil Company. Process for dispersing cellular micro-organisms with chelating aqueous alkaline surfactant systems. 3,853,771, Cl. 252-8.55b.

Fenichel, Richard L.: *See—*
Wolf, Milton; Sellstedt, John H.; and Fenichel, Richard L., 3,853,876.

Fenollar, Theodore Robert. Method and apparatus for repairing sheet elements of automobile bodies. 3,854,029, Cl. 219-149.000.

Fergason, James L., to Hoffmann-La Roche Inc., mesne. Gasket for liquid crystal light shutters. 3,853,392, Cl. 350-160.0lc.

Fernandez, Nicolas: *See—*
Berton, Yves; Chauvet, Pierre; Clapit, Stephane; and Fernandez, Nicolas, 3,853,980.

Ferranti-Packard Limited: *See—*
Tyler, Anton Roy; Lower, William Matthew; Taylor, Maurice Kenyon; and Forsyth, Robert C., 3,854,035.

Ferraris, Giuseppe: *See—*
Priola, Aldo; Cesca, Sebastiano; and Ferraris, Giuseppe, 3,853,829.

Ferraro, Frank A., to Warner-Lambert Company. Shaving unit for safety razor. 3,852,883, Cl. 30-346.580.

Ferrigno, Thomas Howard. Fluxing agent modified pigmentary compositions. 3,853,573, Cl. 106-288.00b.

Ferrigno, Thomas Howard. Processing modified pigmentary compositions. 3,853,574, Cl. 106-288.00b.

Ferris, Leslie M.: *See—*
McNeese, Leonard E.; Ferris, Leslie M.; and Smith, Fred J., 3,853,979.

Fiat Societa per Azioni: *See—*
Palazzetti, Mario; and Grisotto, Franco, 3,853,385.

Fiber Industries, Inc.: *See—*
Ethridge, Frederick Allen; Taylor, Michael Paul; and Thompson, Scott Winfield, 3,852,857.

Fibreboard Corporation: *See—*
Moore, Norman H., 3,853,261.

Fichtel & Sachs AG: *See—*
Kreuzer, Dieter; and Lutz, Dieter, 3,853,311.

Fields, Carleton M.: *See—*
Sigrud, Donald L.; Fields, Carleton M.; Rickel, Ernest R.; and Cline, Joseph A., 3,852,854.

Fila, Jurgen; and Kwiatkowski, Joachim, to Bosch, Robert, Elektronik GmbH. Tube means within an injection-molded temple for accommodating electric conductors therein. 3,853,393, Cl. 351-111.000.

Filhaber, Ilmar J., to Fargo Mfg. Company, Inc. Cable gripping unit. 3,852,850, Cl. 24-136.00r.

Filipowski, George H. Hanging file assembly. 3,853,227, Cl. 211-162.000.

Filippov, Vladimir Ivanovich; and Sumarokov, Mikhail Vasilievich. Method and apparatus for combusting flammable liquid wastes. 3,853,454, Cl. 431-7.000.

Fink, Walter: *See—*
Clark, Frank S.; and Fink, Walter, 3,853,776.

Finn, Joseph F.: *See—*
Cicione, Robert J.; Najjar, Edward G.; Scanlon, Patricia M.; Ohlson, John L.; and Finn, Joseph F., 3,852,829.

Firestone Tire & Rubber Company, The: *See—*
Oldack, Richard C.; Raines, Charles C.; and Montgomery, Richard L., 3,853,796.

Fischer, Edward J. Toilet reservoir valve. 3,853,141, Cl. 137-436.000.

Fischer, Jean Arnold: *See—*
Arfelt, Soren Christian Schoubye; Clausen, Ib Christian; Jensen, Johannes; Fynbo, Knud Hansen; and Fischer, Jean Arnold, 3,853,340.

Fisher, Chester Donald, to Sprout, Waldron & Company, Inc. Reversible refiner feeder. 3,853,276, Cl. 241-247.000.

Fisher, Lyman C., to United States of America, Navy. Safety and arming device. 3,853,056, Cl. 102-16.000.

Fitch, Clifford E., Sr.: *See—*
Albright, Charles Jere; and Fitch, Clifford E., Sr., 3,853,044.

Flasche, Gunter; and Tretner, Werner, to Bosch, Robert, Fernsehanlagen GmbH. Method for the manufacture of photoelectron multipliers. 3,853,374, Cl. 316-19.000.

Fleissner, Heinz, to Vepa AG. Method for the continuous high-grade finishing of textile materials. 3,853,604, Cl. 117-119.800.

Fletcher, Peter C.: *See—*
Janus, Alan R.; Fletcher, Peter C.; Ridosh, Michael H., Jr.; and Freihube, Walter P., 3,853,648.

Florin, Roland E.: *See—*
Wall, Leo A.; Brown, Daniel W.; and Florin, Roland E., 3,853,828.

Floyd, Middleton Brawner, Jr.: *See—*
Bernady, Karel Francis; Floyd, Middleton Brawner, Jr.; Poletto, John Frank; Schaub, Robert Eugene; and Weiss, Martin Joseph, 3,853,951.

Fluidtech Corporation: *See—*
Osheroff, Gene W., 3,853,173.

Flum, Paul, Ideaa, Inc.: *See—*
Flum, Paul L.; and Fowler, Dewalt W., 3,853,073.

Flum, Paul L.; and Fowler, Dewalt W., to Flum, Paul, Ideaa, Inc. Table-like display furniture unit and stackable modules thereof. 3,853,073, Cl. 108-91.000.

Flum, Robert S., Sr.: *See—*
Daudelin, Roland G.; Flum, Robert S., Sr.; Norris, Bob; and Woolston, Lionel L., 3,853,081.

Fluor Corporation: *See—*
Gibson, Robert G.; and Carruba, Samuel C., 3,852,969.

Flynn, William P.: *See—*
Christini, Theodore P.; Flynn, William P.; Inskeep, John B.; and McCauley, Harry J., 3,853,094.

FMC Corporation: *See—*
Berkowitz, Sidney; and Roth, Edwin S., 3,853,867.

Folkenroth, Earl Earnest; and Ullman, Robert, to AMP Incorporated. Insulation stripper and wire separator for twisted wire pairs. 3,853,156, Cl. 140-149.000.

Folkert, Henry, to Folkert, Inc. Belt drive and tensioning apparatus. 3,853,018, Cl. 74-242.13a.

Folkert, Inc.: *See—*
Folkert, Henry, 3,853,018.

Folmer, Orville F., Jr., to Continental Oil Company. Energy absorber for laser pyrolysis. 3,853,503, Cl. 55-67.000.

Fonjallaz, Claude: *See—*
Vittoz, Eric Andre; and Fonjallaz, Claude, 3,852,952.

Foremost International Industries, Ltd.: *See—*
Pusch, Allen A., 3,853,359.

Forenade Fabriksverken: *See—*
Karlstrom, Rolf G. E.; and Jansson, Leif A., 3,853,027.

Forman, Andrew. Toothpaste dispenser. 3,853,243, Cl. 222-101.000.

Forni, Lucio; and Invernizzi, Renzo, to Societa' Italiana Resine S.I.R. S.p.A. Supported catalysts for the production of 4-methyl-pentene from propylene. 3,853,786, Cl. 252-440.000.

Fornstedt, Nermin: *See—*
Porath, Jerker Olof; Fornstedt, Nermin; Sundberg, Lars; Eklund, Conny; and Axen, Rolf, 3,853,708.

Forssell, Carl Fredrik Johan Sigvard, to AB Volvo. Vehicle seat with suspension device. 3,853,296, Cl. 248-399.000.

Forsyth, Robert C.: *See—*
Tyler, Anton Roy; Lower, William Matthew; Taylor, Maurice Kenyon; and Forsyth, Robert C., 3,854,035.

Fossberg, Robert A. Flexible oil boom. 3,852,978, Cl. 61-1.00f.

Foster Brothers Manufacturing Company, The: *See—*
Eakins, Paul W., 3,852,837.

Foster, George B.: *See—*
Riordan, William J.; and Foster, George B., 3,853,455.

Foster, Robbie T.: *See—*
Darlington, William B.; and Foster, Robbie T., 3,853,721.
Korach, Malcolm; and Foster, Robbie T., 3,853,720.

Fotel Inc.: *See—*
Baker, Elton N., 3,853,564.

Fothergill, Noel O. Phase-difference detector. 3,854,117, Cl. 340-16.00r.

Fouquet-Werk Frauz & Planck: *See—*
Muhlhausler, Wolfgang, 3,852,979.

Fowler, Dewalt W.: *See—*
Flum, Paul L.; and Fowler, Dewalt W., 3,853,073.

Fowler, Robert James: *See—*
Price, Samuel; Plummer, Thomas Frederick; Fowler, Robert James; Hill, Edward Reuben; Woodwards, Cecil; and Harrington, Ewart Arthur, 3,852,987.

Fox, John B. Fuel cell. 3,853,628, Cl. 136-86.00d.

Foxboro Company, The: *See—*
Carroll, A. Lindsay, Jr.; and White, Melvin J., Jr., 3,854,145.

Frankel, Milton B.; Golding, David R. V.; Minnich, Basil H.; and Haury, Vernon E., to Rockwell International Corporation. Smokeless composite propellants containing carboxy-or hydroxy-terminated polymers and a nitro-organic oxidizer. 3,853,646, Cl. 149-19.00.

Franz, John E., to Monsanto Company. Regulating plants with N-phosphonomethylglycine and derivatives thereof. 3,853,530, Cl. 71-76.000.

Frederiksen, Ole, to Steiner Company Lausanne S.A. Towel dispenser. 3,853,363, Cl. 312-38.000.

Freed, Elisabeth Hertz: *See—*
Freed, Meier E.; and Freed, Elisabeth Hertz, 3,853,879.

Freed, Meier E.; and Freed, Elisabeth Hertz. Tetrahydropyrazinoindole-2-carboxamides. 3,853,879, Cl. 260-268.0tr.

Freed, Selwyn Z.: *See—*

Strauch, Berish; Bloomberg, Allan E.; and Freed, Selwyn Z., 3,853,122.

Freeman, Harold. Violin in the form of a baseball bat. 3,853,032, Cl. 84-275.000.

Freihube, Walter P.: *See—*
Janus, Alan R.; Fletcher, Peter C.; Ridosh, Michael H., Jr.; and Freihube, Walter P., 3,853,648.

Fremont Industries, Inc.: *See—*
Chang, Edward H., 3,853,782.

Frenck, John Parsons; and Poole, Edward Gilpin, Jr., to Du Pont de Nemours, E. I., and Company. Kelvin bridge type corrosion measuring probe. 3,854,087, Cl. 324-65.0cr.

Freshour, Kenneth D.; and van Dyk, John C.; deceased (by Liberty Natl. Bank & Trust Co.; trustee), to Woods Research & Development Corporation. Fluid discharge system. 3,853,271, Cl. 239-8.000.

Freyermuth, Harlan B.; and Randall, David I., to GAF Corporation. Production of substituted ethers of 2-pyrrolidinones. 3,853,910, Cl. 260-326.5fl.

Friauf, Walter S.: *See—*
Peterson, John Ivan; Friauf, Walter S.; and Leighton, Stephen B., 3,854,050.

Frieder, Leonard P., Jr.: *See—*
Luisada, August G.; and Frieder, Leonard P., Sr., 3,853,238.

Frieder, Leonard P., Sr.: *See—*
Luisada, August G.; and Frieder, Leonard P., Sr., 3,853,238.

Friedman, Benjamin; and Adams, Guy E., to Solitron Devices, Inc. Vehicle proximity alerting means. 3,854,119, Cl. 340-33.000.

Friedrich, Edmund; Moself, Josef; Schaumann, Rolf; and Vogelmann, Manfred, to Brown Boveri & Company Limited. Open-cell rigid foam plastic. 3,853,685, Cl. 161-161.000.

Frisch, Erling; and Andrews, Harry N., to Westinghouse Electric Corporation. Nuclear reactor having control-rod retaining means. 3,853,699, Cl. 176-36.00r.

Fuchs, Francis Joseph, Jr., to Western Electric Company, Incorporated. High pressure billet extruder. 3,852,986, Cl. 72-60.000.

Fuji Photo Film Co., Ltd.: *See—*
Tatsuta, Sumitaka; Ueno, Wataru; Minagawa, Nobuhiko; and Kurabayashi, Hiroyuki, 3,853,584.
Tatsuta, Sumitaka; and Ueno, Wataru, 3,853,585.

Fujii, Tadashiro; and Shibuya, Yuzo, to Toyo Jozo Kabushiki Kaisha. Enzymatic production of cephalothin. 3,853,705, Cl. 195-30.000.

Fujimoto, Takeshi: *See—*
Nishi, Tadashi; Watanabe, Tuneyasu; Shimada, Haruo; Fujimoto, Takeshi; Miida, Kazuhiro; and Okazaki, Takashi, 3,853,544.

Fujino, Masahiko; Kobayashi, Shigeru; Obayashi, Mikihiko; Shinagawa, Susumu; and Fukuda, Tsunehiko, to Takeda Chemical Industries, Ltd. Novel nonapeptide amide analogs of luteinizing hormone releasing factor. 3,853,837, Cl. 260-112.500.

Fukuda, Masaaki: *See—*
Yoshino, Takehiko; Yamane, Hisakichi; Sawabe, Eiichi; Yanagimachi, Akio; Fukuda, Masaaki; Kayano, Tatsuo; Masuda, Michio; Takezawa, Teruhiro; Mohri, Katsuo; and Nabeyama, Hiroaki, 3,854,010.

Fukuda, Tsunehiko: *See—*
Fujino, Masahiko; Kobayashi, Shigeru; Obayashi, Mikihiko; Shinagawa, Susumu; and Fukuda, Tsunehiko, 3,853,837.

Fukui, Takasuke: *See—*
Watanabe, Teruji; Fukui, Takasuke; Higurashi, Minoru; Sugisaki, Takao; and Ochiai, Tatsushiro, 3,854,086.

Funayama, Shizuo: *See—*
Shimada, Kazumi; Hotoda, Hideo; Funayama, Shizuo; and Yamamoto, Takeshi, 3,853,714.

Funck, Dr. Ing., KG: *See—*
Funck, Herbert, 3,852,895.

Funck, Herbert, to Funck, Dr. Ing., KG. Shoes or boots. 3,852,895, Cl. 36-2.50r.

Furuoka, Masaru; Ohki, Hisao; Tominaga, Koichi; Hara, Tuguhiro; and Ikeda, Tetsuya, to Gakken Co., Ltd. Information retrieval system. 3,853,224, Cl. 209-80.00s.

Fynbo, Knud Hansen: *See—*
Arfelt, Soren Christian Schoubye; Clausen, Ib Christian; Jensen, Johannes; Fynbo, Knud Hansen; and Fischer, Jean Arnold, 3,853,340.

G. Rau: *See—*
Schneider, Friedrich, 3,853,268.

Gabano, Jean-Paul: *See—*
Lehmann, Gerard; and Gabano, Jean-Paul, 3,853,627.

GAF Corporation: *See—*
Freyermuth, Harlan B.; and Randall, David I., 3,853,910.

Gahwiler, Hermann, to Contraves AG. Counting and analysis apparatus for particles suspended in an electrolytic liquid. 3,854,088, Cl. 324-71.0cp.

Gaillochet, Jean R., to Marinoni. Method of and apparatus for giving information on the ink requirements of a printing forme. 3,853,409, Cl. 356-201.000.

Gainer, John L., to University of Virginia, The. Process for increasing oxygen diffusivity and method for treating atherosclerosis. 3,853,993, Cl. 424-180.000.

Gakken Co., Ltd.: *See—*
Furuoka, Masaru; Ohki, Hisao; Tominaga, Koichi; Hara, Tuguhiro; and Ikeda, Tetsuya, 3,853,224.

Galaske, Folker, to International Standard Electric Corporation. Type lever actuation arrangement in serial printers having rotating type lever magazines. 3,853,211, Cl. 197-18.000.

Ganci, James Barry, to Du Pont de Nemours, E. I., and Company. Osmosis efficiency from tannin treatment of non-porous semipermeable membranes having hydrous heavy metal coatings. 3,853,755, Cl. 210-23.000.

Gander, Robert Johns, to Johnson & Johnson. Novel methacrylate monomer. 3,853,962, Cl. 260-486.00r.

Garbrecht, William L., to Lilly, Eli, and Company. Cephalexin intermediate. 3,853,861, Cl. 260-243.00c.

Garcea, Giampaolo; and Volontieri, Aldo, to Alfa Romeo S.p.A. Electric power feed circuit for utilizing devices installed on motor vehicles. 3,854,053, Cl. 290-38.000.

Gardziella, Arno, to Dynamit Nobel AG. Method of bonding using polyester-wax fusion adhesives. 3,853,665, Cl. 156-332.000.

Gassmann, Hans-Ulrich; Chen, Ching-Muh; Vermot, Michel; and Stringer, Carl W., to Ciba-Geigy AG. Method and apparatus for degassing viscous liquids and removing gas bubbles suspended therein. 3,853,500, Cl. 55-15.000.

Gates Rubber Company, The: *See—*
Lane, James Murray, III; and Lingenfelter, Guy E., 3,853,016.

Gattuso, Marion J., to Universal Oil Products Company. Process for sweetening hydrocarbon products with sulfenamides. 3,853,746, Cl. 208-206.000.

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Gordon, Robert E.; and McNeill, George A., to Monsanto Company. Falling strand devlolatilizer using on preheater with two flash chambers. 3,853,672, Cl. 159-2.0ms.

Gorman, Harold R. Glass sheet conveying and supporting rolls, and apparatus employing such rolls. 3,853,525, Cl. 65-181.000.

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Gotanda, Motohiro. Detecting elements of external force. 3,854,109, Cl. 335-207.000.

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Greven, Hendrik Marie, to Akzona Incorporated. Sedative peptides related to ACTH containing a D-Phe moiety. 3,853,838, Cl. 260-112.500.

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Grunwell, Joyce F.; and Benson, Harvey D., to Richardson-Merrell Inc. Process for the preparation of 3 alpha-hydroxy steroids. 3,853,927, Cl. 260-397.500.

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Hammer, Klaus-Dieter; and Klenk, Ludwig, to Kalle Aktiengesellschaft. Manufacture of a reinforced, non-woven textile fiber sheet material. 3,853,608, Cl. 117-140.000.

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Hanan, Abraham. Joint assembly for a lock structure. 3,853,416, Cl. 403-322.000.

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Harold, Billy E., to Bethlehem Fabrications, Incorporated. Vehicle for carrying other vehicles and its tie-down setup. 3,853,347, Cl. 296-1.00a.

Harper, Robert J., Jr.; Blanchard, Eugene J.; Lofton, John T.; and Gautreaux, Gloria A., to United States of America, Agriculture. Process for dyeing crosslinked cellulosic fabrics with disperse dyestuffs. 3,853,459, Cl. 8-18.000.

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Harris, Guy H.; and Collins, David J., to Dow Chemical Company, The. Flotation of sulfide ores using dithiocarbamates. 3,853,751, Cl. 209-166.000.

Harris, Leslie James; Thorpe, Eric Trevor; Wellborne, John Peter; and D'Aprix, Edward Charles, to Intercontinental Equipment Corporation. Operating heads for fire extinguishers. 3,853,180, Cl. 169-28.000.

Hartlaub, Jerome T., to Honeywell Inc. Stress sensor diaphragms over recessed substrates. 3,853,650, Cl. 156-13.000.

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Haschke, Heinz; Kuzel, Peter; Bader, Erich; Kruger, Horst; Kerschner, Emil; and Hufnagel, Arnold, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Washing and cleansing composition. 3,853,781, Cl. 252-132.000.

Hasegawa, Tsukio; and Iwatsuki, Masahiro, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Passenger vehicle safety belt winding device with means for detecting the pulled-out length of a belt. 3,853,284, Cl. 242-107.400.

Haselton, Frederick R. Infrasonic intrusion detection system. 3,854,129, Cl. 340-276.000.

Haskell, Vernon C.; and Hecht, James L., to Du Pont de Nemours, E. I., and Company. Vinylidene chloride-topcoated, orthophosphate-coated polymeric objects. 3,853,588, Cl. 117-46.0fc.

Haskell, Vernon C.; Hench, Larry L.; and Yates, Paul C., to Du Pont de Nemours, E. I., and Company. Phosphate coated polymeric shaped objects. 3,853,591, Cl. 117-47.00a.

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Hawkins, Howard C.; and Engstrom, Arthur B., to Hazel Park Schwinn Cycle Center, Inc. Bag carrier for bicycles. 3,853,253, Cl. 224-39.000.
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Dahl, Hilbert D.; Haworth, Gordon R.; and Edmond, Tibor O., 3,853,186.
Hayakawa, Yoshikazu: *See*—
Hirashima, Kenzo; Matsui, Shuni; and Hayakawa, Yoshikazu, 3,853,199.
Hayashi, Kazuo, to Nissan Motor Company, Limited. Air purifier. 3,853,512, Cl. 55-124.000.
Hayashi, Yutaka: *See*—
Tarui, Yasuo; Sekigawa, Toshihiro; and Hayashi, Yutaka, 3,853,644.
Hayden, Richard Earle; and Chanaud, Robert Charles, to Bolt, Beranek and Newman, Inc. Foil structures with reduced sound generation. 3,853,428, Cl. 416-231.000.
Hayes, Roger. Gripping cam. 3,853,021, Cl. 74-568.00r.
Haymond, Herman Ralph. Method and apparatus for clinical testing of biological fluids. 3,853,468, Cl. 23-230.00b.
Hazel Park Schwinn Cycle Center, Inc.: *See*—
Hawkins, Howard C.; and Engstrom, Arthur B., 3,853,253.
Headle, Herbert W., Jr., to United States of America, Navy. Angle solver plot board. 3,852,886, Cl. 33-76.000.
Healy, Gerald S., to Meyer Industries, Inc. Portable safety clamp. 3,852,943, Cl. 24-134.00r.
Hebenbrock, Klaus-Friedrich: *See*—
Eiter, Karl; Hebenbrock, Klaus-Friedrich; and Plempel, Manfred, 3,853,852.
Hecht, James L.: *See*—
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Haskell, Vernon C., Jr.; and Hecht, James L., 3,853,587.
Heckenkamp, Edward B., to Allis-Chalmers Corporation. Draft arm latch assembly. 3,853,335, Cl. 280-478.00r.
Heckh, Gerhard: *See*—
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Heden, Carl Goran, to Ab Biotex. Installation for automation of microbiological work techniques. 3,853,711, Cl. 195-127.000.
Hefferan, Gerald T.: *See*—
Hough, William V.; Guibert, Clarence R.; and Hefferan, Gerald T., 3,853,941.
Heiderer, Fred G., to General Motors Corporation. Motor vehicle lamp assembly. 3,854,040, Cl. 240-7.10r.
Heimbrock, Henry H., to Van Products Incorporated. Cluster assembly and connector clip therefor. 3,853,388, Cl. 339-192.0rl.
Heiser, Edward J., to Dow Chemical Company, The. Coatings containing plastic polymeric pigments. 3,853,579, Cl. 117-15.000.
Hellerbach, Joseph; Walser, Armin; Bretschneider, Hermann; and Rudolph, Werner, to Hoffmann-La Roche Inc. Alkyl (N-phenylsulfonyloxy) carbamates. 3,853,953, Cl. 260-470.000.
Hellermann, Paul, G.m.b.H.: *See*—
Kabel, Heinrich, 3,853,155.
Hellwig, Karl-Ruediger: *See*—
Willersinn, Herbert; Gausepohl, Hermann; Naarmann, Herbert; and Hellwig, Karl-Ruediger, 3,853,461.
Helm, Dietrich, to Scherring AG. Mixed amine-phenol hardeners for epoxy resins. 3,853,812, Cl. 260-47.0ec.
Helm, Frederick A. Automobile top luggage rack. 3,853,254, Cl. 224-42.10d.
Helms, John D., to Matchpoint Industries, Inc. Pressurization apparatus. 3,853,222, Cl. 206-315.000.
Hench, Larry L.: *See*—
Haskell, Vernon C.; Hench, Larry L.; and Yates, Paul C., 3,853,591.
Hennessy, James J., Jr., to Hennessy Products, Incorporated. Hopper gasket structure. 3,853,070, Cl. 105-247.000.
Hennessy Products, Incorporated: *See*—
Hennessy, James J., Jr., 3,853,070.
Hennrick, Donald F., to Vickers, Zed. Apparatus for indicating engine piston position. 3,852,887, Cl. 33-181.0at.
Henrich, Edward R., to Bergerson-Caswell, Inc. Well cleaning apparatus. 3,853,176, Cl. 166-223.000.
Henrick, Clive A., to Zoecon Corporation. 4-Thia unsaturated esters and acids. 3,853,958, Cl. 260-481.00r.
Henry, Robert B.: *See*—
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Herbert, John T.; Sullivan, Paul E.; and Vitt, Stanley P., Jr., to Lockheed Aircraft Corporation Flexible elbow joint for pipes. 3,853,337, Cl. 285-49.000.
Hergert, Richard E.: *See*—
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Heritage, Marcus B.; and Wardly, Goerge A., to International Business Machines Corporation. Exposure regulated scanning illumination means for electron projection systems. 3,854,071, Cl. 315-30.000.
Hermann, Stanley R.: *See*—
Peters, Gary J.; and Hermann, Stanley R., 3,853,660.
Hermeyer, Bernd, to U.S. Philips Corporation. Self-triggered circuit arrangement for a measuring amplifier. 3,854,096, Cl. 328-114.000.
Herrett, Wilfred H.: *See*—
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Herron, Robert H.; and Smothers, William J., to Bethlehem Steel Corporation. Powder metal mix containing carbonaceous binder and green compacts made therefrom. 3,853,572, Cl. 106-284.000.
Herwig, Walter; and Kleiner, Hans-Jerg, to Farbwerke Hoechst Aktiengesellschaft. Flame resistant thermoplastic polyesters. 3,853,819, Cl. 260-75.00p.
Herzog, Alexis; and Brechbuehler, Hans Ulrich, to Ciba-Geigy Corporaion. Azido-s-triazines. 3,853,868, Cl. 260-249.600.
Hesler, Milton E.: *See*—
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Hess, Charles Henry. Material removing bit. 3,852,923, Cl. 51-352.000.
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Heymer, Gero; and Wasel-Nielen, Horst-Dieter, to Knapsack Aktiengesellschaft. Process for the manufacture of pyrophosphoric acid by crystallization. 3,853,486, Cl. 23-301.00r.
Hi-Hard Rolls, Inc.: *See*—
Vinarcsik, Joseph E.; and Jachim, John A., 3,853,214.
Higuchi, Yoshitaka; and Ishii, Susumu, to Yoshida Kogyo Kabushiki Kaisha. Twin pull tab slider. 3,852,851, Cl. 24-205.111.
Higurashi, Minoru: *See*—
Watanabe, Teruji; Fukui, Takasuke; Higurashi, Minoru; Sugisaki, Takao; and Ochiai, Tatsushiro, 3,854,086.
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Hine, Harry E.; and Hine, Noreen E. Wall display device. 3,853,226, Cl. 211-104.000.
Hine, Noreen E.: *See*—
Hine, Harry E.; and Hine, Noreen E., 3,853,226.
Hintze, Rudolf. Air conditioning apparatus for automotive vehicles or the like. 3,852,976, Cl. 62-499.000.
Hirano, Koki; and Kobayashi, Kyoji, to Jidosha Denki Kogyo Kabushiki Kaisha. Ball joint apparatus. 3,853,414, Cl. 403-71.000.
Hirashima, Kenzo; Matsui, Shuni; and Hayakawa, Yoshikazu, to Nissan Motor Company, Limited. Collision sensor for fender bumper operated vehicle safety device. 3,853,199, Cl. 180-91.000.
Hirota, Kuniomi: *See*—
Shimizu, Shozo; Shinohara, Hiroshi; Asai, Junichi; Aiki, Takashi; Hirota, Kuniomi; and Kishi, Toashi, 3,853,597.
Hitachi Electronics, Ltd.: *See*—
Yoshino, Takehiko; Yamane, Hisakichi; Sawabe, Eiichi; Yanagimachi, Akio; Fukuda, Masaaki; Kayano, Tatsuo; Masuda, Michio; Takezawa, Teruhiro; Mohri, Katsuo; and Nabeyama, Hiroaki, 3,854,010.
Hitachi, Ltd.: *See*—
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Hitzelberger, Alan L., to General Motors Corporation. Vehicle pilot pressure controlled brake system with wheel lock control modulating means. 3,853,357, Cl. 303-21.00f.
Hobart Manufacturing Company, The: *See*—
Engebretsen, Einar O., 3,853,052.
Grunewald, Ernst, 3,853,053.
Hochart, Paul, to Saint-Gobain Industries. High temperature roller with high silica fabric sleeve. 3,853,526, Cl. 65-253.000.
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Hoechst Aktiengesellschaft: *See*—

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Hoffa, Jack L.; and Brown, John J., to Beckman Instruments, Inc. Liquid sample supply apparatus. 3,853,008, Cl. 73-423.00r.

Hoffmann-La Roche Inc.: *See—*
Becher, Elisabeth; Schocher, Arno Johannes; and Widmer, Erich, 3,853,707.
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Hogan, Robert G., to Corning Glass Works. Core member for catalytic oxidation converter. 3,853,485, Cl. 23-288.00f.

Holberg, Robert. Submerged pipeline burirl apparatus. 3,852,972, Cl. 61-72.400.

Holden, Patrick E. Folding tailgate step. 3,853,369, Cl. 296-62.000.

Holdstock, Norman G.: *See—*
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Holland, Dewey G.: *See—*
Bechara, Ibrahim S.; and Holland, Dewey G., 3,853,818.

Holle, Bernd; and Winter, Gerhard, to Bayer Aktiengesellschaft. Substantially non-greying titanium dioxide pigments for use in resin compositions. 3,853,575, Cl. 106-300.000.

Hollenbeck, Keith E.: *See—*
Clark, Wesley D.; and Hollenbeck, Keith E., 3,853,125.

Holley, Myle J., Jr. Torsion-mode breasting dolphin. 3,852,968, Cl. 61-46.000.

Holt, Brian, to Ciba-Geigy Corporation. Azine derivatives of piperidine. 3,853,890, Cl. 260-293.630.

Holt, Frank G. Manually controlled variable pitch propeller. 3,853,427, Cl. 416-167.000.

Holtz & Willemsen, G.m.b.H.: *See—*
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Honda Giken Kogyo Kabushiki Kaisha (Honda Motor Co., Ltd.): *See—*
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Honda R & D Co., Ltd.: *See—*
Kusaka, Kunio; Sekine, Tomio; Osawa, Makoto; Hagiwara, Yoshitoshi; and Takagi, Yoshiaki, 3,853,545.

Honeywell Inc.: *See—*
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Weber, Hendrik Gustaaf Otto, 3,853,307.

Hooker Chemical Corporation: *See—*
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Hoover Ball and Bearing Company: *See—*
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Hopkins, Johns, University, The: *See—*
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Hopkins, Richard Baier: *See—*
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Hopwood, William J.: *See—*
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Horie, Einosuke; Kikuchi, Masakazu; and Hatori, Shigekazu, to Taiyo Yuden Kabushiki Kaisha. Apparatus for compensation of right left pincushion distortion. 3,854,108, Cl. 335-210.000.

Horiie, Shigeki; Kurematsu, Susumu; Asai, Shinichiro; and Saito, Chiaki, to Denki Kagaku Kogyo K.K. Process for preparing a film of a tapered copolymer of styrene-butadiene or mixtures thereof. 3,853,978, Cl. 264-210.00r.

Horizons Incorporated, a division of Horizons Research Incorporated: *See—*
Reynard, Kennard A.; and Rose, Selwyn H., 3,853,794.

Hormone Research Foundation: *See—*
Li, Choh H., 3,853,832.
Li, Choh Hao, 3,853,833.

Horn, Stuart B.; and Walters, Buford T., to United States of America, Army. Split cycle cryogenic cooler with rotary compressor. 3,853,437, Cl. 418-61.000.

Horsewell, Henry George: *See—*
Haslam, Fred; Horsewell, Henry George; and Cannaway, Paul Henry, 3,853,039.

Horvath, Robert, to Environmental Research Institute of Michigan. Method and apparatus for monitoring pollution of natural waters. 3,852,997, Cl. 73-61.10r.

Hosaka, Hideo, to Bell & Howell Company. Liquid applicator for a photographic printer. 3,853,400, Cl. 355-103.000.

Hostettler, Fritz; and Graefe, Peter U., to Inter Polymer Research Corporation. Liquid injection molding apparatus. 3,853,446, Cl. 425-217.000.

Hotoda, Hideo: *See—*
Shimada, Kazumi; Hotoda, Hideo; Funayama, Shizuo; and Yamamoto, Takeshi, 3,853,714.

Hou, Kenneth C., to Celanese Corporation. Carbon fiber reinforced composite article. 3,853,600, Cl. 117-76.00t.

Hough, William V.; Guibert, Clarence R.; and Hefferan, Gerald T., to Mine Safety Appliance Company. Preparation of orthoborates of monohydric alcohols and phenols. 3,853,941, Cl. 260-462.00r.

Houghton, Norman F., to Philco-Ford Corporation. Apparatus for forming articles from plastic sheet material. 3,853,449, Cl. 425-388.000.

House, William Cullingford; and Maroudas, Nicholas George, to National Research Development Corporation. Cell culture systems. 3,853,712, Cl. 195-127.000.

Hovorka, J. Warren. Football statistic calculating and recording rule. 3,853,264, Cl. 235-70.00a.

Howard, Bernard. Course selector and indicator. 3,853,089, Cl. 116-129.00r.

Howland, Bradford; Howland, Howard C.; and Proll, Arthur T. Kinematic ball thrust bearing. 3,853,362, Cl. 308-230.000.

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Howland, Bradford; Howland, Howard C.; and Proll, Arthur T., 3,853,362.

Hoyt, John D.; and Pennella, John J., to United States of America, Navy. Electronic firing delay device, demolition. 3,853,063, Cl. 102-70.20r.

Huber, Anton, GmbH & Co. KG: *See—*
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Huber, J. M., Corporation: *See—*
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Hubner, Klaus, to Siemens Aktiengesellschaft. Commutatorless motor arrangement. 3,854,078, Cl. 318-227.000.

Hudson, William L. Glow discharge solution treatment apparatus. 3,854,051, Cl. 250-546.000.

Hufnagel, Arnold: *See—*
Haschke, Heinz; Kuzel, Peter; Bader, Erich; Kruger, Horst; Kerschner, Emil; and Hufnagel, Arnold, 3,853,781.

Hufstader, Gibson O., to General Motors Corporation. Connecting and accessory drive means for separate internal combustion engines. 3,852,963, Cl. 60-717.000.

Hughes Aircraft Company: *See—*
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Hughes Aircraft Corporation: *See—*
Jamison, John W.; Veronda, Dan R.; and Demmer, Roy E., 3,853,367.

Hughes, Ian F., to Inland Steel Company. Cold rolled steel strip with improved drawing properties and method for producing same. 3,853,639, Cl. 148-12.00c.

Hukase, Masahiro; Tomono, Makoto; and Inowa, Sigeru, to Konishiroku Photo Industry Co. Ltd. X-ray color electrophotography. 3,854,043, Cl. 250-315.000.

Hukuba, Hiroshi. Carpet fluffing device. 3,852,844, Cl. 15-142.000.

Hulderman, Garry N.; Lader, Leon J.; and Winderman, Jay B., to General Dynamics Corporation. Millimeter wave mixer. 3,854,083, Cl. 321-69.00w.

Hunt, John M.: *See—*
Gupta, Gokal C.; and Hunt, John M., 3,854,036.

Hunter, C. Shelburn. Heat resistant dyes for polyester film products. 3,853,807, Cl. 260-40.00r.

Hunter, Frank Ray, to Du Pont de Nemours, E. I., and Company. Nonfluorescent, green-yellow cationic dye. 3,853,859, Cl. 260-240.800.

Hunter, Robert E., to Continental Lektroniks Corporation. Burglarproof chain guard. 3,853,343, Cl. 292-264.000.

Hunter, Robert T.: *See—*
Inamorato, Jack T.; and Hunter, Robert T., 3,853,779.

Huppi, Xaver Johann, to Elex Limited AG. Electrical precipitating apparatus. 3,853,511, Cl. 55-112.000.

Hurst, John, to Grace, W. R., & Co. Waterproofed concrete structure. 3,853,682, Cl. 161-92.000.

Hurwitz, Marvin J.; Kennedy, David C.; and Kollman, Carl J., to Rohm and Haas Company. Separation of waste dyestuffs by adsorption process. 3,853,758, Cl. 210-27.000.

Husted, Royce Hill, to Saroy Engineering. Power driven ski. 3,853,192, Cl. 180-5.000.

Hutchinson, John Jefferson: *See—*
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Huver, Laurence L.: *See—*
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Ilford Limited: *See—*
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Illinois Tool Works, Inc.: *See—*
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Inamoto, Yoshiaki: *See—*
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Industrie Pirelli S.p.A.: *See—*
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Innerfield, Irving, to Association for Pharmacologic Research, Inc. Serum diagnostic test for maladies causing change in fibrinolytic activity in the blood. 3,853,710, Cl. 195-99.000.

Inoue, Kimio: *See—*
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Inoue, Mutsuhiro; and Inoue, Shunzo, to Canon Kabushiki Kaisha. Roll duplicator for continuously copying images of an original film onto a copy film. 3,853,401, Cl. 355-106.000.

Inoue, Shunzo: *See—*
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International Standard Electric Corporation: *See—*
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Ioffe, Benyamin Alexandrovich; Mikelson, Artur Eduardovich; and Kirko, Igor Mikhailovich. Method of orienting bodies in magnetic field and device for carrying same into effect. 3,854,110, Cl. 335-302.000.

Ise Electronics Corporation: *See—*
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Ishiai, Tamio; Aigami, Koji; Nishii, Tasaku; and Saito, Masahiro, to Kao Soap Co., Ltd. Process for preparation of slates of sandwich arrangement. 3,853,652, Cl. 156-79.000.

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Ishikawa, Toshio; and Ohshima, Mituzi, to Nippondenso Co., Ltd. Driving system for automobile engine cooling fan. 3,853,098, Cl. 123-41.110.

Ishimura, Toshihiro: *See—*
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Iskenderian, Edward; and Iskenderian, Ronald M., 3,853,101.

Ismail, Roshdy; and Janssen, Paul. Aralkyl silanes substituted in the nucleus. 3,853,935, Cl. 260-448.80r.

Ito, Kiyoshi; Ikemoto, Masahiko; Kimura, Kazuhiko; and Nakanishi, Teruo, to Kakenyaku Kako Co., Ltd. 2-Substituted-(2-hydroxy-3-lower alkylaminopropoxy)-benzofurans. 3,853,923, Cl. 260-346.20r.

Ito, Yoichiro: *See—*
Tanimura, Takenori; and Ito, Yoichiro, 3,853,765.

Ivanovics, George A.: *See—*
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Iwasaki Tsushinki Kabushiki Kaisha: *See—*
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Iwasaki, Yoshiki: *See—*
Takahashi, Nobuaki; Sato, Masaaki; Iwasaki, Yoshiki; and Nisikawa, Kazunori, 3,854,098.

Iwatsuki, Masahiro: *See—*
Hasegawa, Tsukio; and Iwatsuki, Masahiro, 3,853,284.

Iyengar, Yathiraja; and Lemley, James Dean, to Du Pont de Nemours, E. I., and Company. Synthetic filaments coated with a lubricating finish. 3,853,607, Cl. 117-138.80f.

Izawa, Motoo: *See—*
Kishi, Toyokazu; Harada, Setsuo; Muroi, Masayuki; and Izawa, Motoo, 3,853,842.

J & J Manufacturing Company: *See—*
Cox, Thomas L.; and Rodriquez, David G., 3,853,670.

Jachim, John A.: *See—*
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Jacknow, Burton B.: *See—*
Buckley, David A.; Jacknow, Burton B.; Mermelstein, Robert; and , 3,853,778.

Jackson, Billy G.; Stamper, Martha C.; and Bottorff, Edmond M., to Lilly, Eli, and Company. Cephalosporin C isolation process. 3,853,863, Cl. 260-243.00c.

Jackson Communication Corporation: *See—*
Jackson, Richard L., 3,853,304.

Jackson, Philip C.: *See—*
Ehling, Ernest H.; Jackson, Philip C.; and McCarthy, James V., 3,854,125.

Jackson, Richard L., to Jackson Communication Corporation. Multisheave aerial block. 3,853,304, Cl. 254-193.000.

Jacob, Guy Michel: *See—*
Meuleman, Johannes; and Jacob, Guy Michel, 3,853,487.

Jacobs, John J. Apparatus for electrolytically treating articles. 3,853,733, Cl. 204-203.000.

Jacobs Manufacturing Company Limited, The: *See—*
Derbyshire, George Cecil, 3,853,495.

Jacobsen, Lawrence E. Tin can folder. 3,853,054, Cl. 100-233.000.

Jaeschke, Harold R., to Hoerner Waldorf Corporation. Display carton. 3,853,216, Cl. 206-45.140.

Jagers, Leopold. Mechanical device for cold-sawing steel-profiles, etc. utilizing a vertical displaceable saw blade. 3,853,028, Cl. 83-461.000.

Jamison, John W.; Veronda, Dan R.; and Demmer, Roy E., to Hughes Aircraft Corporation. Cabinet. 3,853,367, Cl. 312-259.000.

Jansing, Walter: *See—*
Buscher, Enno; Eils, Friedrich; Jansing, Walter; Kirchner, George; and Markfort, Dieter, 3,853,504.

Jansma, Roger H.: *See—*

Allen, Earle E., Jr.; Smit, James A.; Walter, Robert R.; and Jansma, Roger H., 3,853,609.

Janssen, Paul: *See*—
Ismail, Roshdy; and Janssen, Paul, 3,853,935.

Janssen, Peter Johannes Michiel, to U.S. Philips Corporation. Servo system for reading from a disc-shaped record carrier containing signals coded in optical form. 3,854,015, Cl. 179-100.30v.

Jansson, Leif A.: *See*—
Karlstrom, Rolf G. E.; and Jansson, Leif A., 3,853,027.

Janus, Alan R.; Fletcher, Peter C.; Ridosh, Michael H., Jr.; and Freihube, Walter P., to Material Sciences Corporation, mesne. Process for forming a metal oxide pattern. 3,853,648, Cl. 156-7.000.

Jaquith, Howard Randall, to Sybron Corporation. Volumetric measuring system. 3,853,007, Cl. 73-395.000.

Jarboe, Alfred J.; deceased (by Jarboe, Hilda Estelle; administratrix). Ladder supporting device. 3,853,202, Cl. 182-108.000.

Jarboe, Hilda Estelle: *See*—
Jarboe, Alfred J., 3,853,202.

Jarolimek, Premysl: *See*—
Klatil, Karel; Vogel, Tomas; Moc, Milos; and Jarolimek, Premysl, 3,853,827.

Jayaraman, Ponnusami: *See*—
Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,853,841.

Jeanmart, Claude: *See*—
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JENAer Glaswerk Schott & Gen.: *See*—
Guenahner, Franz, 3,853,522.

Jenkins, Victor Frederick; and Lee, Stephen Arthur, to Laporte Industries Limited. Quasi-prepolymerization technique for preparation of polyurethane foams. 3,853,795, Cl. 260-2.5ac.

Jenn, Louis Joseph. Dining arrangement. 3,853,115, Cl. 126-299.00b.

Jenny, Walter: *See*—
Desai, Nalin Binduprasad; Jayaraman, Ponnusami; Ramanathan, Visvanathan; Artz, Klaus; Naik, Navnitrai Nagarji; and Jenny, Walter, 3,853,841.

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Loftfield, Richard E.; and Jhaveri, Ramesh C., 3,853,738.

Jidosha Denki Kogyo Kabushiki Kaisha: *See*—
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Jobst, Raymond O.; and Perry, William A. Crane bucket equipment. 3,853,346, Cl. 294-72.000.

Johns, Paul A.: *See*—
Bergson, Arnold A.; and Johns, Paul A., 3,853,200.

Johns-Manville Corporation: *See*—
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Morrone, Nicholas Francis, 3,853,689.

Johnsen, Knut J.: *See*—
Rigler, Donald T.; and Johnsen, Knut J., 3,853,722.

Johnson & Johnson: *See*—
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Johnson, Edward E.: *See*—
Shepard, John C., Jr.; Johnson, Edward E.; and Bearman, Robert W., 3,853,735.

Johnson, Hardie B., to Du Pont de Nemours, E. I., and Company. Terminal loader. 3,852,866, Cl. 29-203.00b.

Johnson, Lloyd D.; and Raudat, John L., to Emhart Corporation. Apparatus for opening a carton flap. 3,852,942, Cl. 53-382.000.

Johnson, Raymond C., Jr.; and Peperone, Salvador J., to United States of America, Army. Radio ranging utilizing doppler signals. 3,854,134, Cl. 343-14.000.

Johnson Service Company: *See*—
Lechner, Thomas J., Jr., 3,853,617.

Johnston, George E.: *See*—
Meyer, Delbert H.; and Johnston, George E., 3,853,924.

Jonas, Rochus; Unger, Richard; Schliep, Hans-Jochen; and Schorscher, Ernst, to Merck Patent Gesellschaft mit beschrankter Haftung. 1,2,3,4,10,10a-Hexahydropyrazino[1,2:a]indole-2-carboxamidines. 3,853,878, Cl. 260-268.0tr.

Jones, Charles. Apex seal assembly for rotary mechanisms. 3,853,439, Cl. 418-121.000.

Jones, Cordis W., to Hastings Dynamold Corporation. Automatic rebar installer. 3,853,444, Cl. 425-126.000.

Jones, Harold R. Magnetic wall stud. 3,852,935, Cl. 52-730.000.

Jones, Jane P. Method of sealing a bathing or shower cap to the head of the wearer. 3,852,823, Cl. 2-68.000.

Jones, John F.: *See*—
Martin, Jon W.; Bell, Jeffrey L.; and Jones, John F., 3,853,809.

Jones, Keith Thomas: *See*—
Wright, Harold; and Jones, Keith Thomas, 3,853,274.

Jones, Loyd W., to Amoco Production Company. Removing oil from waste water with sulfur. 3,853,753, Cl. 210-23.000.

Jones, Ralph L. Anchor silencer and boat protector. 3,853,083, Cl. 114-210.000.

Jones, Richard L.: *See*—
Afanador, Carlos P.; and Jones, Richard L., 3,852,872.

Jones, Trevor O., to General Motors Corporation. Inflatable occupant restraint system. 3,853,331, Cl. 280-150.0ab.

Joseph, Eugene S.: *See*—
Tuchto, Jeff; and Joseph, Eugene S., 3,854,107.

Judd, Everett W., 51% to Hammon, Daniel F. and 9% to Olson, La Clead. Pressure change actuated sequencing valve. 3,853,145, Cl. 137-624.180.

Julita, Piera: *See*—
Cotta, Ernesto; Julita, Piera; and Sanfilippo, Aurora, 3,853,991.

Junk, Heinrich J., to Chamois Electronic Manufacturing Company, Inc. Mounting bracket. 3,853,292, Cl. 248-203.000.

Junker, Bernhard T., to Monsanto Company. Apparatus for producing wire from the melts of steel alloys. 3,853,171, Cl. 164-283.00s.

Justus, Siegfried: *See*—
Rickert, Walter; and Justus, Siegfried, 3,853,057.

K-F Brick Company, Inc., mesne: *See*—
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Kaalverink, Gerardus Hendrikus: *See*—
Van Duynhoven, Adrianus Henricus; and Kaalverink, Gerardus Hendrikus, 3,853,153.

Kaalverink, Gerardus Hendrikus, to Ruti-Te Strake B.V. Device for detecting a textile thread carried through a channel. 3,853,408, Cl. 356-199.000.

Kabel, Heinrich, to Hellermann, Paul, G.m.b.H. Tape tensioning tools. 3,853,155, Cl. 140-123.600.

Kabel-und Metallwerke Gutehoffnungshutte-Aktiengesellschaft: *See*—
Glander, Fritz O.; Rager, Horst; and Eilhardt, Bernd, 3,854,002.

Kabushiki Kaisha Daini Seikosha: *See*—
Shimada, Kazumi; Hotoda, Hideo; Funayama, Shizuo; and Yamamoto, Takeshi, 3,853,714.
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Kabushiki Kaisha Sanwa Jidoki Seisakusho: *See*—
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Kabushiki Kaisha Suwa Seikosha: *See*—
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Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See*—
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Kabushiki Kaisha Toyota Chuo Kenkyusho: *See*—
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Kabuto, Katsukuni: *See*—
Ogasahara, Fumio; Komanura, Seiji; and Kabuto, Katsukuni, 3,853,435.

Kadison, Leon A.; and Maguire, Eileen, to Crown City Plating Co. Electroless plating solution and process. 3,853,590, Cl. 117-47.00a.

Kadlec, Bohumil: *See*—
Vosolsobe, Jan; Dohnalek, Rudolf; Kadlec, Bohumil; Michalek, Jiri; Simecek, Antonin; Cap, Miroslav; and Novak, Miroslav, 3,853,790.

Kaelble, David H.: *See*—
Miller, Darrow L.; and Kaelble, David H., 3,853,805.

Kaelin, Joseph Richard. Apparatus for the conversion of prepared refuse sewage sludge mixtures into earth substance by biological decomposition. 3,853,480, Cl. 23-259.100.

Kageyama, Yoichi: *See*—
Yamaguchi, Mitsuo; and Kageyama, Yoichi, 3,853,922.

Kai, Motoshi, to Toho Yogyo Co., Ltd. Roll made of non-woven cloth. 3,853,677, Cl. 161-36.000.

Kaiser, Ado; Koch, Wolfgang; Scheer, Marcel; and Wolcke, Uwe, to Hoffmann-La Roche Inc. Tyrosine derivatives. 3,853,954, Cl. 260-471.00a.

Kakenyaku Kako Co., Ltd.: *See*—
Ito, Kiyoshi; Ikemoto, Masahiko; Kimura, Kazuhiko; and Nakanishi, Teruo, 3,853,923.

Kalle Aktiengesellschaft: *See*—
Hammer, Klaus-Dieter; and Klenk, Ludwig, 3,853,608.

Kalopissis, Gregoire; Bugaut, Andree; and Estradier, Francoise, to Societe Anonyme dite: L'Oreal. Human hair dyeing compositions containing diphenylamines. 3,853,464, Cl. 8-11.000.

Kamichika, Muraji; Miyake, Yasuhiro; and Doura, Fumihiro, to Takeda Chemical Industries, Ltd. Process for adhering reinforcing fibers and rubber. 3,853,599, Cl. 117-76.00t.

Kanebo, Ltd.: *See*—
Matsui, Masao; Tokura, Susumu; and Yamabe, Masahiro, 3,853,977.

Kano, Ichrio, to Canon Kabushiki Kaisha. Mask pattern printing device. 3,853,398, Cl. 355-43.000.

Kansai Paint Company Limited: *See*—
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Kao Soap Co., Ltd.: *See*—
Ishiai, Tamio; Aigami, Koji; Nishii, Tasaku; and Saito, Masahiro, 3,853,652.
Nakayama, Hirokazu; Inamoto, Yoshiaki; and Goukon, Atsushi, 3,853,928.

Kappus, Helmut: *See*—
Rodermund, Gerd; and Kappus, Helmut, 3,852,868.

Karlstrom, Rolf G. E.; and Jansson, Leif A., to Forenade Fabriksverken. Apparatus for cutting resilient porous material. 3,853,027, Cl. 83-4.000.

Kaspers, Helmut: *See*—
Widdig, Arno; Kuhle, Engelbert; Grewe, Ferdinand; and Kaspers, Helmut, 3,853,908.

Kato, Hirotada; Nakamura, Kazuo; and Wada, Toshiya, to Nippon Steel Corporation. Organic coating composition for an electrical steel sheet. 3,853,971, Cl. 260-901.000.

Katsuki, Hiroshi: *See*—
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Kaufman, Harold B., Jr.; McCarthy, John P.; and Schiffmann, Robert F., to DCA Food Industries Inc. Environmental temperature control system. 3,854,024, Cl. 219-10.550.

Kaufman, Martin H.; and Roy, Edward M., to United States of America, Navy. Composite propellant containing polytetrafluoroethylene powder and butyl or ethylene-propylene rubber. 3,853,645, Cl. 149-19.300.

Kawagoe, Hiroto: *See—*
Nomiya, Kosei; and Kawagoe, Hiroto, 3,854,059.

Kayabakogyokabushikikaisha: *See—*
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Kayano, Tatsuo: *See—*
Yoshino, Takehiko; Yamane, Hisakichi; Sawabe, Eiichi; Yanagimachi, Akio; Fukuda, Masaaki; Kayano, Tatsuo; Masuda, Michio; Takezawa, Teruhiro; Mohri, Katsuo; and Nabeyama, Hiroaki, 3,854,010.

Keady, Richard J.: *See—*
Winer, Bernard B.; and Keady, Richard J., 3,854,062.

Kearney, John M.: *See—*
Meyer, Richard R.; Kearney, John M.; and Burnstein, Philip J., 3,853,510.

Kedar, Mordecai. Dock and wharf fenders. 3,853,084, Cl. 114-219.000.

Kehr, Clifton L.; Wszolek, Walter R.; and Lundsager, Christian B., to Grace, W. R., & Co. Laminated honeycomb structure and method of making same. 3,853,681, Cl. 161-68.000.

Keith, Arley, Jr.: *See—*
Nye, Dudley D., Jr.; Carlson, Peter J.; and Keith, Arley, Jr., 3,854,058.

Kelcz, Frederick: *See—*
Mistretta, Charles A.; and Kelcz, Frederick, 3,854,049.

Keller, Josef, to Windmoller & Holscher. Welding apparatus. 3,854,031, Cl. 219-244.000.

Kelsey, Paul S., to K-F Brick Company, Inc., mesne. Method for casting slab-faced panels. 3,853,976, Cl. 264-90.000.

Kenagy, Paul E. Insufflator gas flow device. 3,853,105, Cl. 128-145.800.

Kennecott Copper Corporation: *See—*
Skarbo, Roald R., 3,853,725.

Kennedy, David C.: *See—*
Hurwitz, Marvin J.; Kennedy, David C.; and Kollman, Carl J., 3,853,758.

Kennedy, Duane O.: *See—*
Eskridge, Wade A.; and Kennedy, Duane O., 3,853,036.

Kennedy, Wiley T.: *See—*
McNeely, Arthur O.; and Kennedy, Wiley T., 3,853,656.

Kentor, William E., to Servbest Foods, Inc. Process for shaping comminuted meat products. 3,853,999, Cl. 426-105.000.

Kerschner, Emil: *See—*
Haschke, Heinz; Kuzel, Peter; Bader, Erich; Kruger, Horst; Kerschner, Emil; and Hufnagel, Arnold, 3,853,781.

Kesling, Keith K.; and Bailey, Paul D., to General Motors Corporation. Integral hinge push button for appliance control panel. 3,853,366, Cl. 312-223.000.

Kessel, Bernhardt. Apparatus for producing tubing, especially from material suitable for injection molding. 3,853,299, Cl. 249-168.000.

Kestner, Olga Evgenievna; Vinokurov, Vasily Ivanovich; Axenova, Irina Petrovna; Ozemblovskaya, Galina Tadeushevna; Shakhpenderian, Amayak Pogosovich; Shagurin, Anatoly Zlexeevich; Popova, Larisa Nikolaevna; Zverev, Ivan Ivanovich; Kokonin, Sergei Sergeevic; Matveev, Anatoly Alexandrovich; Petrunin, Alexandr Mikhailovich; Sherstnev, Ebgeny Sergeevich; Akimtsev, Anatoly Alexeevich, Oblasti, Balashikha Moskovskoi; and Sklyarov, Nikolai Mitrofanovich. High-friction cermet material. 3,853,493, Cl. 29-182.500.

Ketts, Harry C., III: *See—*
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Keuffel & Esser Company: *See—*
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Keyes, Fred: *See—*
Weir, Casper J., Jr.; and Keyes, Fred, 3,853,249.

Khuntia, Natabara, to General Motors Corporation. Master coupling link. 3,853,360, Cl. 305-58.000.

Kibler, Robert L.; and Dosmann, Thomas R., Sr., to Lambert Brake Corporation, mesne. Spot brake structure including a pivoted lever actuator. 3,853,206, Cl. 188-72.900.

Kidde, Walter, Company, Inc.: *See—*
Riordan, William J.; and Foster, George B., 3,853,455.

Kikuchi, Masakazu: *See—*
Horie, Einosuke; Kikuchi, Masakazu; and Hatori, Shigekazu, 3,854,108.

Kildibekov, Valery Askhatovich: *See—*
Vasiliev, Jury Sergeevich; Vasiliev, Boris Alexandrovich; Nikitin, Jury Jurievich; Datsenko, Vladimir Alexandrovich; Popov, Vyacheslav Maximovich; Semenov, Jury Dmitrievich; Kildibekov, Valery Askhatovich; and Bikchurin, Talgat Nazmetdinovich, 3,853,188.

Kiley, Harry M.: *See—*
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Killian, Robert J.; and Sproul, Nolte V., to Aspro Inc. Method of making multi-groove pulleys. 3,852,863, Cl. 29-159.00r.

Kim, Manjin J., to General Electric Company. Method of making a metal insulator silicon field effect transistor (MIS-FET) memory device and the product. 3,853,496, Cl. 29-571.000.

Kimura, Kazuhiko: *See—*
Ito, Kiyoshi; Ikemoto, Masahiko; Kimura, Kazuhiko; and Nakanishi, Teruo, 3,853,923.

King, Douglas A.: *See—*
Toulis, William J.; and King, Douglas A., 3,854,116.

Kinoshita, Yoshikuni, to Ryohsei Plastic Industry Co., Ltd. Automatic cap sealing device. 3,852,940, Cl. 53-292.000.

Kirchner, George: *See—*
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Kirk, Donald C., Jr., to Litton Systems, Inc. Contact removal tool for electrical connector. 3,852,864, Cl. 29-203.00h.

Kirkham, Bruce E.: *See—*
De Vincent, Patsy; and Kirkham, Bruce E., 3,853,148.

Kirkhuff, William Joseph. Interlocking shingle arrangement. 3,852,934, Cl. 52-539.000.

Kirko, Igor Mikhailovich: *See—*
Ioffe, Benyamin Alexandrovich; Mikelson, Artur Eduardovich; and Kirko, Igor Mikhailovich, 3,854,110.

Kirsch, Francis William: *See—*
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Kishi, Toyokazu; Harada, Setsuo; Muroi, Masayuki; and Izawa, Motoo, to Takeda Chemical Industries, Ltd. Esters of antibiotics B-5050 and tetrahydro-B-5050. 3,853,842, Cl. 260-210.0ab.

Kishida, Yukichi; Yoshimoto, Masafumi; and Ishida, Noboru, to Sankyo Company Limited. 2-Ethynylcyclopropane compounds and process for the preparation thereof. 3,853,952, Cl. 260-469.000.

Kishikawa, Hiroshi; Katsuki, Hiroshi; and Terazawa, Takayuki, to Sumitomo Chemical Company, Limited. Reinforced polypropylene composition. 3,853,808, Cl. 260-42.180.

Kitai, Kiyoshi; and Morino, Yukio, to Seiko Koki Kabushiki Kaisha. Shutter operating mechanism. 3,854,143, Cl. 354-265.000.

Kitano, Shin; and Momose, Yutaka, to Aisin Seiki Kabushiki Kaisha. Transmission control system for vehicles. 3,853,210, Cl. 192-4.00c.

Kiuchi, Masashi: *See—*
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Klapper, Jacob: *See—*
Kratt, Edward J. A., III; and Klapper, Jacob, 3,854,099.

Klar, Erich: *See—*
Runge, Ernst-Georg; and Klar, Erich, 3,854,048.

Klatil, Karel; Vogel, Tomas; Moc, Milos; and Jarolimek, Premysl, to Spolek Pro Chemickou a Hutni Vyrobu. Self curing acrylate type composition for cementing metal parts. 3,853,827, Cl. 260-86.10e.

Klaubert, Earl C.; Lavery, Adelbert L.; and Broderick, Anthony J., to United States of America, Transportation. Automotive exhaust system leak test. 3,852,996, Cl. 73-40.50r.

Kleber-Colombes: *See—*
Ballu, Louis, 3,852,964.

Kleiner, Hans-Jerg: *See—*
Herwig, Walter; and Kleiner, Hans-Jerg, 3,853,819.

Klenk, Ludwig: *See—*
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Kline, Richard H.: *See—*
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Klock, Byron V.; and White, Rudolph C., to Texaco Inc. Sewage ozonizing unit. 3,853,760, Cl. 210-63.000.

Kloth, James Albert; and Vigeant, George Henry; deceased (by Vigeant, George Henry, Mrs.; heiress). Notched plate clasp apparatus. 3,854,114, Cl. 339-97.00r.

Klumb, Ralph Howard: *See—*
Anthony, Andrew James; Hutchinson, John Jefferson; and Klumb, Ralph Howard, 3,853,703.

Klupt, Carle D., to Scorecard Promotions, Inc. Calendar. 3,853,741, Cl. 206-45.310.

Klutchko, Sylvester; and Von Strandtmann, Maximilian, to Warner-Lambert Company. Process for the preparation of 3-cyanochromones. 3,853,921, Cl. 260-345.200.

Knapsack Aktiengesellschaft: *See—*
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Knoll International, Inc.: *See—*
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Knudsen, Ole Friis, to Danfoss A/S. Direct current converter for isolating a measuring transducer from its power source. 3,854,091, Cl. 324-118.000.

Knufer, Heinrich: *See—*
Hardtl, Karl Heinz; Knufer, Heinrich; and Stuijts, Andreas Leopoldus, 3,853,973.

Kobayashi, Kyoji: *See—*
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Kobayashi, Shigeru: *See—*
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Kobe Steel Co., Ltd.: *See—*
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Kobe Steel, Ltd.: *See—*
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Koch, Kurt-Henning: *See—*
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Koch, Wolfgang: *See—*
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Koenig, Lowell; and Presco, Albert, to Alden Press, Inc. Production of copperized etched aluminum printing plates. 3,853,558, Cl. 96-33.000.

Kogyo Gijutsuin: *See—*
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Kogyo Gijutsuin; a/k/a Industrial Science and Technology, Ministry of International Trade and Industry, Agency of: *See—*
Tarui, Yasuo; Sekigawa, Toshihiro; and Hayashi, Yutaka, 3,853,644.

Kohler, Karl, to International Standard Electric Corporation. Direction determining method. 3,854,137, Cl. 343-106.00d.

Kohler, Karl, to International Standard Electric Corporation. Radiolocation system particularly adapted for aircraft landing systems. 3,854,138, Cl. 343-108.00r.

Kohn, Gustave K.: *See—*
Brown, Melanchthon S., 3,853,966.

Kohn, Gustave K.; and Singer, Malcolm S., to Chevron Research Company. Bactericidal 3-halo-5-alkyl-Δ2-thiadiazoline-4-ones. 3,854,000, Cl. 424-270.000.

Kokonin, Sergei Sergeevich: *See—*
Kestner, Olga Evgenievna; Vinokurov, Vasily Ivanovich; Axenova, Irina Petrovna; Ozemblovskaya, Galina Tadeushevna; Shakhpenderian, Amayak Pogosovich; Shagurin, Anatoly Zlexeevich; Popova, Larisa Nikolaevna; Zverev, Ivan Ivanovich; Kokonin, Sergei Sergeevic; Matveev, Anatoly Alexandrovich; Petrunin, Alexandr Mikhailovich; Sherstnev, Ebgeny Sergeevich; Akimtsev, Anatoly Alexeevich; Oblasti, Balashikha Moskovskoi; and Sklyarov, Nikolai Mitrofanovich, 3,853,493.

Kokusai Denshin Denwa Co., Ltd.: *See—*
Watanabe, Teruji; Fukui, Takasuke; Higurashi, Minoru; Sugisaki, Takao; and Ochiai, Tatsushiro, 3,854,086.

Kolb, James M.; and O'Leary, Kevin J., to Electronor Corporation. Platinum group metal oxide coated electrodes. 3,853,739, Cl. 204-290.00f.

Koletvinov, Vladimir Ivanovich: *See—*
Nikolaev, Jury Diomidovich; Ljuskin, Sergei Nikolaevich; Koletvinov, Vladimir Ivanovich; and Pavlenko, Alexandra Semenovna, 3,853,550.

Kollman, Carl J.: *See—*
Hurwitz, Marvin J.; Kennedy, David C.; and Kollman, Carl J., 3,853,758.

Kolm, Henry H., to Massachusetts Institute of Technology. Eddy current printer apparatus. 3,853,055, Cl. 101-316.000.

Komanura, Seiji: *See—*
Ogasahara, Fumio; Komanura, Seiji; and Kabuto, Katsukuni, 3,853,435.

Komatsu, Ikuo I.; Rieckman, Roger A.; and Roszyk, Leon M., to Sunbeam Corporation. Combined hair dryer and detangler. 3,853,133, Cl. 132-11.00a.

Komhyr, Walter D. Nut starter. 3,853,025, Cl. 81-71.000.

Kommanditbolaget United Stirling (Sweden) AB & Co.: *See—*
Salomonsson, Nils Arvid; and Torstensson, Bo Goran Torsten, 3,852,961.

Kondis, Thomas J., to Aluminum Company of America. Process for promoting reactivity of aluminum. 3,853,542, Cl. 75-68.000.

Kondis, Thomas J., to Aluminum Company of America. Production of hydrocarbyl aluminum hydrides. 3,853,931, Cl. 260-448.00a.

Koneke, Ernst-Wilhelm; and Mohl, Wilhelm, to Thamert, Otto, Textileund Kunststoff GmbH & Co. KG Firma. Breast prosthesis. 3,852,833, Cl. 3-36.000.

Koning, Robert A., 20% interest to Lee, Raymond, Organization, Inc., The. Padlock locking device. 3,852,981, Cl. 70-2.000.

Konishiroku Photo Industry Co. Ltd.: *See—*
Hukase, Masahiro; Tomono, Makoto; and Inowa, Sigeru, 3,854,043.

Kontos, Emmanuel G., to United States Rubber Company. Crystallizable stereoblock rubbery copolymers. 3,853,969, Cl. 260-878.00b.

Korach, Malcolm; and Foster, Robbie T., to PPG Industries, Inc. Electrolysis of brine using permeable membranes comprising fluorocarbon copolymers. 3,853,720, Cl. 204-98.000.

Koyama, Mitsuo: *See—*
Onda, Eiichi; Koyama, Mitsuo; and Nakagawa, Tadashi, 3,854,144.

Kozak, Theodore F., to Union Carbide Corporation. Pressure-sensitive tape fastener for disposable diapers. 3,853,129, Cl. 128-287.000.

Kozuki, Susumu: *See—*
Ogiso, Mitsutoshi; Aizawa, Hiroshi; and Kozuki, Susumu, 3,853,396.

Kragelsky, Igor Viktorovich: *See—*
Bronovets, Marat Alexandrovich; Dobychin, Mikhail Nikolaevich; Kragelsky, Igor Viktorovich; and Mikhin, Nikolai Matveevich, 3,852,993.

Kramer, Daniel E. Dual voltage speed control for forced air heat exchanger. 3,853,174, Cl. 165-39.000.

Kratt, Edward J. A., III; and Klapper, Jacob, to RFL Industries, Inc. Wideband coherent FM detector. 3,854,099, Cl. 329-110.000.

Kreuz, Otto; and Raab, Stefan, to Demag Aktiengesellschaft. Method of manipulating polygonal cross-section cast copper bars. 3,853,233, Cl. 214-152.000.

Kreuzer, Dieter; and Lutz, Dieter, to Fichtel & Sachs AG. Shock absorber for automobile bumper. 3,853,311, Cl. 267-64.00r.

Krieger, Josef: *See—*
Obendorf, Werner; Lindner, Irmgard; Krieger, Josef; and Schwarzinger, Ernst, 3,853,866.

Krock, Richard H.; and Zdanuk, Edward J., to Mallory, P. R., & Co., Inc. Electrical contact material. 3,852,879, Cl. 29-630.00c.

Kruger, Horst: *See—*
Haschke, Heinz; Kuzel, Peter; Bader, Erich; Kruger, Horst; Kerschner, Emil; and Hufnagel, Arnold, 3,853,781.

Kuconis, Barney E. Roll jacks. 3,853,301, Cl. 254-124.000.

Kugelmann, Adolf: *See—*
Conzelmann, Gerhard; and Kugelmann, Adolf, 3,854,105.

Kuhle, Engelbert: *See—*
Widdig, Arno; Kuhle, Engelbert; Grewe, Ferdinand; and Kaspers, Helmut, 3,853,908.

Kuhlmann, Ugine: *See—*
Weiss, Francis; and Rusch, Raymond, 3,853,945.

Kume, Tadashi, to Honda Giken Kogyo Kabushiki Kaisha (Honda Motor Co., Ltd.). Torch nozzle orientation for internal combustion engine. 3,853,097, Cl. 123-32.saa.

Kunert, Heinz. Nomogram type calculator slidable rule. 3,853,265, Cl. 235-89.00r.

Kunz, Anton, to Balzers Patent- und Beteiligungs-Aktiengesellschaft. Target changer for sputtering by ionic bombardment. 3,853,740, Cl. 204-298.000.

Kurabayashi, Hiroyuki: *See—*
Tatsuta, Sumitaka; Ueno, Wataru; Minagawa, Nobuhiko; and Kurabayashi, Hiroyuki, 3,853,584.

Kurdin, Lev Nikolaevich: *See—*
Polshikov, Ivan Vasilievich; Kurdin, Lev Nikolaevich; and Titarenko, Alexandr Timofeevich, 3,853,667.

Kurek, Margarita Evgenievna: *See—*
Vainshtein, Boris Iosifovich; Zimin, Alexandr Vasilievich; Chérnyshov, Evgeny Andreevich; Kurek, Margarita Evgenievna; Polivanov, Alexandr Nikolaevich; Bogovtseva, Ljudmila Petrovna; Starodubtsev, Eduard Sergeevich; Masljukov, Anatoly Ivanovich; Andreev, Vadimir Ivanovich; Ezerets, Miron Aronovich; and Zorov, Boris Ivanovich, 3,853,726.

Kurematsu, Susumu: *See—*
Horiie, Shigeki; Kurematsu, Susumu; Asai, Shinichiro; and Saito, Chiaki, 3,853,978.

Kurihara, Norman H.; and Bublitz, Donald E., to Dow Chemical Company, The. Bis-p-dithiino(2,3-e:2',3'-g)(2,1,3) benzothiadiazole-5,6,9,10-tetracarbonitrile. 3,853,901, Cl. 260-304.000.

Kurtz, Leonard D.; and Bidwell, Robert, to Deknatel Inc., mesne. Valved underwater drainage apparatus. 3,853,128, Cl. 128-275.000.

Kusaka, Kunio; Sekine, Tomio; Osawa, Makoto; Hagiwara, Yoshitoshi; and Takagi, Yoshiaki, to Tokushu Seiko Co., Ltd. and Honda R & D Co., Ltd. Cast alloy for valve seat insert. 3,853,545, Cl. 75-128.00a.

Kusunose, Tetsuhiro: *See—*
Ishikawa, Tatsuo; Yamashita, Keiji; Okubo, Norio; Sakashita, Masahira; Okamoto, Arimichi; and Kusunose, Tetsuhiro, 3,853,687.

Kuzel, Peter: *See—*
Haschke, Heinz; Kuzel, Peter; Bader, Erich; Kruger, Horst; Kerschner, Emil; and Hufnagel, Arnold, 3,853,781.

Kwiatkowski, Joachim: *See—*
Fila, Jurgen; and Kwiatkowski, Joachim, 3,853,393.

Kysor Industrial Corporation: *See—*
Graber, Walter P., 3,853,269.

Labes, Mortimer M., to Temple University. Stable liquid crystal mixtures including anti-type nematic compounds. 3,853,785, Cl. 252-408.000.

Labossier, William H.; and Schilling, Hartmut, to Raytheon Company. Metallized isotropic boron nitride body and method for making same. 3,853,582, Cl. 117-22.000.

Laby, Jordan M., to American Shower Door Co., Inc. Sliding door assembly. 3,852,916, Cl. 49-409.000.

Lader, Leon J.: *See—*
Hulderman, Garry N.; Lader, Leon J.; and Winderman, Jay B., 3,854,083.

LaFleur, Arthur E., to Square Bag-It Corporation. Bag making machine and method. 3,853,664, Cl. 156-306.000.

LaForce, Robert C. Fishing sinker having buoyancy. 3,852,906, Cl. 43-43.140.

Lahn, Gerard C., to Exxon Research and Engineering Company. Sour water disposal in fluid solids systems. 3,853,744, Cl. 208-127.000.

Laine, Bernard Maurice: *See—*
Champagnat, Alfred; and Laine, Bernard Maurice, 3,853,704.

Lambert Brake Corporation, mesne: *See—*
Kibler, Robert L.; and Dosmann, Thomas R., Sr., 3,853,206.

Lambert, Gerard L.; and Greenlay, Charles A., to Johns-Manville Corporation. Apparatus for opening and emptying a container. 3,853,235, Cl. 214-305.000.

Lambert, Joe Chester, to General Electric Company. Dual level plugging circuit. 3,854,076, Cl. 318-341.000.

Lambert, Yvon: *See—*
Monkovic, Ivo; and Lambert, Yvon, 3,853,889.

Lamers, David F.: *See—*

Vanderheiden, Greg C.; Lamers, David F.; Geisler, Chris Daniel; and Volk, Andrew M., 3,854,131.
Lamm, Gunther; and Dehnert, Johannes, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Certain substituted 2,6-diamino-4-methyl-nicotinonitriles the corresponding nicotinamides and derivatives thereof. 3,853,895, Cl. 260-294.900.
Land, Edwin H.; and Bloom, Stanely M., to Polaroid Corporation. Container for diffusion transfer films with whitening agent containing processing solution. 3,853,562, Cl. 96-76.00c.
Lane, James Murray, III; and Lingenfelter, Guy E., to Gates Rubber Company, The. Crop gathering belt. 3,853,016, Cl. 74-231.00c.
Langenbach, Jack E.: *See—*
Goodman, David S.; and Langenbach, Jack E., 3,853,379.
Langer, Arthur: *See—*
Demichiel, John; and Langer, Arthur, 3,854,074.
Langstroth, Theodore A.; and Neave, Arthur S., Jr. Fluorescent whitening compositions. 3,853,583, Cl. 117-33.50t.
Laporte Industries Limited: *See—*
Jenkins, Victor Frederick; and Lee, Stephen Arthur, 3,853,795.
Larson, Charles O., to Larson, Chas. O., Co. Article support bracket. 3,853,293, Cl. 248-223.000.
Larson, Chas. O., Co.: *See—*
Larson, Charles O., 3,853,293.
Larson, Lawrence H.; and Tindall, Don J. Apparatus for forming progressive power lens blanks. 3,853,499, Cl. 51-33.00r.
Larson, Lester M. Thermoplastic splint or cast. 3,853,124, Cl. 128-90.000.
Lassiter, Wilbert A. Motorcycle backrest. 3,853,351, Cl. 297-452.000.
Latrobe Steel Company: *See—*
Schlatter, Rene; and Stroup, James P., 3,853,540.
Laurent, Bernard; and Haslay, Claude, to Compagnie de Saint-Gobain. Silicate glass fiber compositions. 3,853,569, Cl. 106-50.000.
Lavery, Adelbert L.: *See—*
Klaubert, Earl C.; Lavery, Adelbert L.; and Broderick, Anthony J., 3,852,996.
Lawford, Victor Nicholas, to International Telephone and Telegraph Corporation. Fluid sensing systems. 3,853,006, Cl. 73-301.000.
Lawrence, Kenneth George. Artificial cultch for oysters. 3,853,095, Cl. 119-4.000.
Lawton, Ernest L., to Monsanto Company. Bonding of poly(ethylene terephthalate) induced by low-temperature plasmas. 3,853,657, Cl. 156-180.000.
Lazar, Ferenc: *See—*
Szabo, Katalin, nee Mogyorosi; Banhidy, Janos; Lazar, Ferenc; and Ormossy, Miklos, 3,853,535.
Lazar, Michael, to Burndy Corporation. High pressure electrical contacts. 3,853,382, Cl. 339-95.00r.
Lazaridig, Lazaros J.; Searight, Edward F.; and Shefsiek, Paul K., to Thermo Electron Corporation. Vapor transfer food preparation and heating apparatus. 3,853,112, Cl. 126-19.000.
Lazarus, Harry J. Winding and tightening tool and method for manufacturing same. 3,852,884, Cl. 32-63.000.
Le Martret, Odile: *See—*
Clemence, Francois; and Le Martret, Odile, 3,853,875.
Leach, Clifford Harvey: *See—*
Westlake, John Henry; Snyder, John Wallace; Leach, Clifford Harvey; and Cebuliak, Steve Edward, 3,853,004.
Lear, Wm., Enterprises, Inc.: *See—*
Greenwell, Jack E., 3,854,077.
Lechner, Thomas J., Jr., to Johnson Service Company. Fluidic load regulator. 3,853,617, Cl. 137-824.000.
Ledbetter, Harvey D.: *See—*
Byrne, Joseph B.; and Ledbetter, Harvey D., 3,853,610.
Lee, Paul L.; Wright, Sam B.; and Sims, Glenn E., to United States of America, Army, mesne. Purification of cyclotetramethylene tetranitramine. 3,853,847, Cl. 260-239.ohm.
Lee, Raymond, Organization, Inc., The: *See—*
Guerard, Allen D., 3,853,159.
Koning, Robert A., 3,852,981.
Sancho, Joseph; and Elliott, Willie, 3,853,333.
Lee, Stephen Arthur: *See—*
Jenkins, Victor Frederick; and Lee, Stephen Arthur, 3,853,795.
Leeson, Patrick George. Speed changing mechanisms. 3,852,998, Cl. 74-63.000.
Leesona Corporation: *See—*
Paiva, Manuel S., 3,853,215.
Leffler, Dennis Frank, to Pelton & Crane Company. Adjustable headrest and backrest for a chair. 3,853,350, Cl. 297-404.000.
Lehman, James E.; and Lush, John S., to Anchor Hocking Corporation. Lehr loader. 3,853,213, Cl. 198-31.0ab.
Lehmann, Gerard; and Gabano, Jean-Paul, to Societe des Accumulateurs Fixes et de Traction (Societe Anonyme). Lithium electric cells with novel positive active materials and non-aqueous electrolyte. 3,853,627, Cl. 136-83.00r.
Lehmann, Gunter: *See—*
Matthias, Guenther; Diem, Hans; and Lehmann, Gunter, 3,853,719.
Leighton, Stephen B.: *See—*
Peterson, John Ivan; Friauf, Walter S.; and Leighton, Stephen B., 3,854,050.
Leimgruber, Willy; and Weigele, Manfred, to Hoffmann-La Roche Inc. Process for the preparation of aminomethylene malononitrile. 3,853,946, Cl. 260-465.50r.
Leistner, Horst: *See—*
Brod, Gerd; Felber, Wilfried; Leistner, Horst; and Morlock, Gerhard, 3,853,822.
Leitner, Frank W.; and Childress, Bobby B., to Coltron Industries, Inc. Thermal systems incorporating apparatus and methods for simulating timed related temperatures. 3,854,034, Cl. 219-494.000.
Leliaert, Raymond M. Bag type filter device. 3,853,509, Cl. 55-341.000.
Lemley, James Dean: *See—*
Iyengar, Yathiraja; and Lemley, James Dean, 3,853,607.
Les Cables De Lyon: *See—*
Duret, Jean, 3,854,003.
Leute, Richard K.: *See—*
Goldstein, Avram; Leute, Richard K.; and Ullman, Edwin F., 3,853,914.
Levene, Leon; and Thomas, Ian M., to Owens-Illinois, Inc. Strengthened glass articles and methods using glass precursor ion exchange medium. 3,853,673, Cl. 161-1.000.
Levene, Leon, to Owens-Illinois, Inc. Multiple ion exchange steps for strengthening glass and methods of making same. 3,853,674, Cl. 161-1.000.
Levengood, William C., to Sensors, Incorporated. Method for determining the viability of seeds prior to germination. 3,852,914, Cl. 47-58.000.
Levenson, Nathan S. Housing assembly with convertible housing units. 3,852,924, Cl. 52-79.000.
Lever Brothers: *See—*
van den Ouweland, Godefridus Antonius Maria, 3,853,918.
Lever Brothers Company: *See—*
Begemann, Willem Johan; and Harkes, Pieter Daniel, 3,853,996.
Leveskis, Newton G. Process for preparation of aldehyde and ketone organic peroxide compositions and the use thereof as polymerization initiators. 3,853,967, Cl. 260-861.000.
Levinos, Steven; and Neithardt, William, Jr., to Keuffel & Esser Company. Photographic material utilizing an aromatic hydroxy compound and a 2-nitro-phenyl-aldehyde. 3,853,559, Cl. 96-35.000.
Levinson, Melvin L. Microwave oven heating member. 3,854,023, Cl. 219-10.550.
Lewis, J. Lewis: *See—*
Sapkus, Jurgis; Lewis, J. Lewis; Piurkowsky, Stephen W.; and Cleveland, Dale P., 3,852,911.
Leyers, William E.: *See—*
Moore, Donald G.; and Leyers, William E., 3,854,021.
Li, Choh H., to Hormone Research Foundation. Synthetic human pituitary growth hormone and method of producing it. 3,853,832, Cl. 260-112.500.
Li, Choh Hao, to Hormone Research Foundation. Synthetic human growth-promoting and lactogenic hormones and method of producing same. 3,853,833, Cl. 260-112.500.
Liberty Natl. Bank & Trust Co.: *See—*
Freshour, Kenneth D.; and van Dyk, John C., 3,853,271.
Libkie, Herbert A.; and Okoniewski, Norbert T., to General Motors Corporation. Energy absorbing seat adjuster. 3,853,298, Cl. 248-429.000.
Licentia Patent Virwaltungs GmbH: *See—*
Bohm, Harald, 3,853,631.
Ligocki, Philippe, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Polychromatic graphic visual display and control system assembly. 3,854,130, Cl. 340-324.0ad.
Lilly, Eli, and Company: *See—*
Garbrecht, William L., 3,853,861.
Jackson, Billy G.; Stamper, Martha C.; and Bottorff, Edmond M., 3,853,863.
Marshall, Winston S., 3,853,905.
Shields, James E., 3,853,834.
Stark, William Max, 3,853,709.
Lincoln, Frank H., Jr.; Pike, John E.; and Youngdale, Gilbert A., to Upjohn Company, The. 15 Lower alkoxy PGA compounds. 3,853,950, Cl. 260-468.00d.
Lindgren, Mats; and Malm, Hillar, to Incentive Research & Development AG (IRD). Apparatus for forming water gel. 3,853,179, Cl. 169-15.000.
Lindner, Irmgard: *See—*
Obendorf, Werner; Lindner, Irmgard; Krieger, Josef; and Schwarzinger, Ernst, 3,853,866.
Lindsey, Richard V.: *See—*
Drinkard, William C., Jr.; and Lindsey, Richard V., 3,853,948.
Lindsley, John Francis: *See—*
Feins, Irvin Ralph; and Lindsley, John Francis, 3,853,788.
Lingenfelter, Guy E.: *See—*
Lane, James Murray, III; and Lingenfelter, Guy E., 3,853,016.
Litton Systems, Inc.: *See—*
Kirk, Donald C., Jr., 3,852,864.
Liu, Wen-Chih: *See—*
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Ljuskin, Sergei Nikolaevich: *See—*
Nikolaev, Jury Diomidovich; Ljuskin, Sergei Nikolaevich; Koletvinov, Vladimir Ivanovich; and Pavlenko, Alexandra Semenovna, 3,853,550.
Lobachev, Anatoly Nikolaevich: *See—*
Distler, Grigory Isaakovich; Lobachev, Anatoly Nikolaevich; Vlasov, Vasily Platonovich; Melnikov, Oleg Konstantinovich; and Triodina, Nina Sergeevna, 3,853,596.
Lockheed Aircraft Corporation: *See—*

Herbert, John T.; Sullivan, Paul E.; and Vitt, Stanley P., Jr., 3,853,337.
Sigrud, Donald L.; Fields, Carleton M.; Rickel, Ernest R.; and Cline, Joseph A., 3,852,854.
Sparling, Kenneth P., 3,852,990.

Locklair, Earl Everett; and Halsey, Donald James, to E-Systems, Inc., mesne. Remote reading tilt encoder. 3,852,890, Cl. 33-366.000.

Loev, Bernard: *See—*
Brenner, L. Martin; and Loev, Bernard, 3,853,865.

Loffler, Tilo: *See—*
Schindler, Herbert; and Loffler, Tilo, 3,852,841.

Loftfield, Richard E.; and Jhaveri, Ramesh C., to Electronor Corporation. Dimensionally stable anode construction. 3,853,738, Cl. 204-286.000.

Lofton, John T.: *See—*
Harper, Robert J., Jr.; Blanchard, Eugene J.; Lofton, John T.; and Gautreaux, Gloria A., 3,853,459.

Lombardino, Joseph G., to Pfizer Inc. Production of 4-hydroxy-1,2-benzothiazine-3-carboxamides. 3,853,862, Cl. 260-243.00r.

Lopke, Edward L.: *See—*
Davis, James L.; and Lopke, Edward L., 3,852,957.

Lorain Products Corporation: *See—*
Chambers, Charles W., Jr., 3,854,012.

Louis, Armel. Locking devices for movable pin-shaped electrical contacts. 3,853,378, Cl. 339-75.00p.

Louw, Johan August; and Ghiselin, Robert Earle, to Textron, Inc. Flash removal apparatus for a friction welding operation. 3,853,258, Cl. 228-2.000.

Louzos, Demetrios V., to Union Carbide Corporation. Zinc fibers and needles and galvanic cell anodes mades. 3,853,625, Cl. 136-30.000.

Lovich, John W.: *See—*
Meller, Oscar W.; Lovich, John W.; and Morse, Frank C., 3,853,239.

Lower, William Matthew: *See—*
Tyler, Anton Roy; Lower, William Matthew; Taylor, Maurice Kenyon; and Forsyth, Robert C., 3,854,035.

LRC Corporation: *See—*
Williams, Heyward Sturges; and Robbins, Robert, 3,854,057.

Lubowitz, Hyman R., to TRW Inc. Thermosetting cyclized polydiene resins. 3,853,815, Cl. 260-63.00r.

Lucas Furnace Developments Limited: *See—*
Stribling, John Brian, 3,853,076.

Lucas, George, to Societe Anonyme dite; Societe Nationale des Petroles d'Aquitaine. Photochemical cycloalkane oximation process. 3,853,729, Cl. 204-162.0xn.

Luchaire S.A.: *See—*
Tartault, Jean; and Minot, Alain, 3,853,058.

Lucidarme, Jean: *See—*
Rioux, Christian; and Lucidarme, Jean, 3,854,065.

Luisada, August G.; and Frieder, Leonard P., Sr.; deceased (by Frieder, Leonard P., Jr., executor), to Gentex Corporation. Smooth operating cargo box. 3,853,238, Cl. 220-1.500.

Lundberg, Kurt Bonnie Karl Axel. Filing cabinet containing storing frames for suspended sheets. 3,853,364, Cl. 312-184.000.

Lundsager, Christian B.: *See—*
Kehr, Clifton L.; Wszolek, Walter R.; and Lundsager, Christian B., 3,853,681.

Luray, Howard L. Hammock package. 3,853,220, Cl. 206-466.000.

Lush, John S.: *See—*
Lehman, James E.; and Lush, John S., 3,853,213.

Luttrell, Richard W., to Caterpillar Tractor Company. Vehicle counterweight apparatus. 3,853,231, Cl. 214-142.000.

Lutz, Dieter: *See—*
Kreuzer, Dieter; and Lutz, Dieter, 3,853,311.

Lynas, Gary Andrew, to Globe Envelopes Products Limited. Method of making pre-addressed envelopes. 3,853,041, Cl. 93-61.00a.

Lynch, Robert W., to Specialty Products Development Corporation. Porous diffuser for gas supply to passenger restraint. 3,853,332, Cl. 280-150.0ab.

Lyshkow, Norman A. Gas dilution apparatus. 3,853,516, Cl. 55-270.000.

MacDonald, Robert D., to Cardinal of Adrian, Inc. Door latch set. 3,853,341, Cl. 292-171.000.

MacFarlan Smith Limited: *See—*
Grew, Edward Leon; and Robertson, Alastair Agnew, 3,853,883.

Mack, Robert, to PPG Industries, Inc. Mercury cell anode short detection and current balancing. 3,853,723, Cl. 204-99.000.

Mackenhus Corporation: *See—*
McNeely, Arthur O.; and Kennedy, Wiley T., 3,853,656.

Mackey, George R., to Bishop Freeman Company. Commercial steam generating hand iron. 3,852,899, Cl. 38-77.600.

Madaio, Anthony J. Process and apparatus for dispensing liquid compositions intended for parenteral administration. 3,853,157, Cl. 141-2.000.

Madalinski, Charles L., Jr.: *See—*
Cook, John N.; and Madalinski, Charles L., Jr., 3,854,016.

Maddox, Harry L.: *See—*
Asar, Madhu P.; and Maddox, Harry L., 3,854,052.

Madey, Marion J., to Poster Products, Inc. Structure for supporting articles for display purposes. 3,853,074, Cl. 108-101.000.

Madigan, Edward J.; and Ruszczycky, Mark M. Infectious kerating bacterin and antiserum and method of preparing same. 3,853,990, Cl. 424-87.000.

Magee, Philip S., to Chevron Research Company. 1,5-Dithia-2,4,6,8-tetrazacyclooctaine-3,7-diones. 3,853,853, Cl. 260-239.30r.

Magnetic Analysis Corporation: *See—*
Mansson, Sven E., Bebick, Paul J.; and Spierer, Edward D., 3,854,085.

Magnino, Pete J.; Hoer, Ralph A.; and Hahn, Robert E., to Ralston Purina Company. Method of forming protein food product. 3,853,839, Cl. 260-123.500.

Maguire, Eileen: *See—*
Kadison, Leon A.; and Maguire, Eileen, 3,853,590.

Maier, Johannes: *See—*
Scholze, Gottfried; Scholze, Dietrich; and Maier, Johannes, 3,853,287.

Maki, Isamu; and Kiuchi, Masashi, to Canon Kabushiki Kaisha. Process for liquid development of electronic photography. 3,853,554, Cl. 96-1.0ly.

Mallory, P. R., & Co., Inc.: *See—*
Krock, Richard H.; and Zdanuk, Edward J., 3,852,879.

Mallory, Peter E.; Davis, Raehn; and van de Houten, Richard S., to General Dynamics Corporation. Frame synchronization system for digital multiplexing systems. 3,854,011, Cl. 179-15.0bs.

Malm, Hillar: *See—*
Lindgren, Mats; and Malm, Hillar, 3,853,179.

Malovich, Peter, to Inland Stee! Company. Soaking pit cover apparatus and method. 3,853,077, Cl. 110-173.00a.

Mandusky, Jack C.: *See—*
Slominski, Walter V.; and Mandusky, Jack C., 3,852,838.

Manson, Charles D., Jr.; and Baker, Eugene E., to Halliburton Company. System for remotely constructing underground structures. 3,853,137, Cl. 137-1.000.

Mansson, Sven E.; Bebick, Paul J.; and Spierer, Edward D., to Magnetic Analysis Corporation. Multi-probe flux leakage testing apparatus producing bipolar signals from the largest simultaneously occurring signals of each polarity. 3,854,085, Cl. 324-37.000.

Marathon Oil Company: *See—*
Merrill, La Vaun S., Jr., 3,853,356.
Norton, Charles J.; and Falk, David O., 3,853,802.

Marchant, Paul A., to Ethyl Development Corporation. Vial or container with safety closure. 3,853,237, Cl. 215-224.000.

Marconi Company, Limited, The: *See—*
Davies, Eric, 3,854,132.

Marechal, Gilles Adrien Georges. Electric connection devices. 3,853,376, Cl. 339-41.000.

Marforio, Nerino, to Rimoldi, Virginio & C., S.p.A. Sewing machine with upper roller feeding device adjustable independently from the feed dog. 3,853,078, Cl. 112-211.000.

Marinoni: *See—*
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Mariotti, Donald J.: *See—*
Altenburger, Otto; Bansemir, Robert H.; Bergquist, George R.; Mariotti, Donald J.; and Neumeier, Gunter F., 3,854,013.

Markfort, Dieter: *See—*
Buscher, Enno; Eils, Friedrich; Jansing, Walter; Kirchner, George; and Markfort, Dieter, 3,853,504.

Marko, Albert J., to Bendix Corporation, The. Arrangement for supporting a symbol in an illuminated instrument. 3,853,088, Cl. 116-129.00r.

Marmor, Leonard, to Richards Manufacturing Company. Knee prosthesis. 3,852,830, Cl. 3-1.000.

Marothy, Rudolf. Structure for storage of liquified gas. 3,852,973, Cl. 62-45.000.

Maroudas, Nicholas George: *See—*
House, William Cullingford; and Maroudas, Nicholas George, 3,853,712.

Marrie, Paul, to S.A.R.L. Etud. Pancake making machine. 3,853,045, Cl. 99-423.000.

Marshall, Winston S., to Lilly, Eli, and Company. Certain 5-(phenoxyphenalkyl)tetrazoles. 3,853,905, Cl. 260-308.00d.

Martin, Anthony N., to United Aircraft Corporation. Aircraft engine pressure ratio autotrim system. 3,852,956, Cl. 60-39.150.

Martin, Jerry Thomas; and Patros, Carl Thomas, to International Business Machines Corporation. Anti-gum and solvating lubricant. 3,853,773, Cl. 252-32.0fe.

Martin, Jon W.; Bell, Jeffrey L.; and Jones, John F., to TRW Inc. Mixtures of particulate fluorinated polymers and rubbers. 3,853,809, Cl. 260-42.370.

Martt, Judson W., to National Steel Corporation. Fluid bearing support for tiltable metallurgical vessels. 3,853,361, Cl. 308-122.000.

Maruishi Iron Works Co. Ltd.: *See—*
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Marz, Gunter: *See—*
Haeusler, Jochen; Marz, Gunter; and Seiffert, Helmut, 3,852,985.

Maser, Craig W.: *See—*
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Masljukov, Anatoly Ivanovich: *See—*
Vainshtein, Boris Iosifovich; Zimin, Alexandr Vasilievich; Chernyshov, Evgeny Andreevich; Kurek, Margarita Evgenievna; Polivanov, Alexandr Nikolaevich; Bogovtseva, Ljudmila Petrovna; Starodubtsev, Eduard Sergeevich; Masljukov, Anatoly Ivanovich; Andreev, Vadimir Ivanovich; Ezerets, Miron Aronovich; and Zorov, Boris Ivanovich, 3,853,726.

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Massie, Stephen N.: *See*—
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Master Control Systems, Inc.: *See*—
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Masuda, Michio: *See*—
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Material Sciences Corporation, mesne: *See*—
Janus, Alan R.; Fletcher, Peter C.; Ridosh, Michael H., Jr.; and Freihube, Walter P., 3,853,648.

Matsui, Masao; Tokura, Susumu; and Yamabe, Masahiro, to Kanebo, Ltd. Method for producing mixed filaments. 3,853,977, Cl. 264-103.000.

Matsui, Shuni: *See*—
Hirashima, Kenzo; Matsui, Shuni; and Hayakawa, Yoshikazu, 3,853,199.

Matsunami, Akira: *See*—
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Mattel, Inc.: *See*—
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Matthias, Guenther; Diem, Hans; and Lehmann, Gunter, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Production of aqueous formaldehyde solutions of low methanol content by distillation with a binary system. 3,853,719, Cl. 203-56.000.

Matto, Victor G.; and Veres, Sandor A. Electromechanical programmable lock. 3,854,120, Cl. 340-164.00r.

Matveev, Anatoly Alexandrovich: *See*—
Kestner, Olga Evgenievna; Vinokurov, Vasily Ivanovich; Axenova, Irina Petrovna; Ozemblovskaya, Galina Tadeushevna; Shakhpenderian, Amayak Pogosovich; Shagurin, Anatoly Zlexeevich; Popova, Larisa Nikolaevna; Zverev, Ivan Ivanovich; Kokonin, Sergei Sergeevic; Matveev, Anatoly Alexandrovich; Petrunin, Alexandr Mikhailovich; Sherstnev, Ebgeny Sergeevich; Akimtsev, Anatoly Alexeevich; Oblasti, Balashikha Moskovskoi; and Sklyarov, Nikolai Mitrofanovich, 3,853,493.

Maurer Commercial Products, Inc.: *See*—
Bambara, Joseph E.; and Pellegrino, Gustave, Jr., 3,854,080.

Mayer, Michael Dainis, to Celanese Corporation. Flame retardant fiber blend. 3,852,947, Cl. 57-140.0by.

Mazur, Robert H.; and Schlatter, James M. Alkyl esters of aspartyl aliphatic amino acid dipeptides. 3,853,835, Cl. 260-112.500.

McAdams, Paul F., to Clark Equipment Company. Transmission shifting mechanism. 3,853,019, Cl. 74-473.000.

McAmis, Kenneth Wayne; Brewton, Lee K.; and Gentry, Bobby C., to Southwire Company. High speed tandem wire drawing and insulation system. 3,852,875, Cl. 29-527.400.

McCarthy, James V.: *See*—
Ehling, Ernest H.; Jackson, Philip C.; and McCarthy, James V., 3,854,125.

McCarthy, John P.: *See*—
Kaufman, Harold B., Jr.; McCarthy, John P.; and Schiffmann, Robert F., 3,854,024.

McCauley, Harry J.: *See*—
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McClain, James E., to Esco Manufacturing Company. Electrical connector apparatus disconnectable link assembly. 3,853,375, Cl. 339-19.000.

McClory, Robert M., to Aqua-Chem. Inc. Filter. 3,853,761, Cl. 210-100.000.

McCombie, William S.: *See*—
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McCook, Norman Lary: *See*—
Abercrombie, William F., Jr.; Trowbridge, Frank R.; and McCook, Norman Lary, 3,853,983.

McCord, Robert C., to Vistron Corporation. Toothbrush and dental-floss dispenser. 3,853,134, Cl. 132-92.00a.

McCracken, Robert H., to United States of America, Army. Method of inducing negative impedance effect, and devices based thereon. 3,853,064, Cl. 102-70.20r.

McCulloch Corporation, mesne: *See*—
Dooley, James L., 3,853,109.

McCullogh, Doyle W. Means for detecting wear on well drill bits. 3,853,184, Cl. 175-39.000.

McDonald, Robert Louis, to Sybron Corporation. Surgical supply cart. 3,853,329, Cl. 280-47.350.

McFarlan, Alden Irving. Air conditioning system and method. 3,853,172, Cl. 165-22.000.

McGarry, Frederick Jerome; and Suen, Tzeng Jiueq, to American Cyanamid Company. Metal substrates bonded with thermosetting resin compositions containing fibrillated polytetrafluoroethylene. 3,853,690, Cl. 161-189.000.

McGhan, Donald K.; and Williams, John E., said McGhan assor. to Heyer-Schulte Corporation. Prosthesis with fixation means. 3,852,832, Cl. 3-36.000.

McGlashen, James N., to Dunlop Holdings Limited. Application of liquid coatings. 3,853,663, Cl. 156-304.000.

McGraw-Edison Company: *See*—
Urani, Angelo, 3,854,111.

McKellin, Wilbur H.: *See*—
D'Angelo, Antonio Joseph; and McKellin, Wilbur H., 3,853,957.

McKinley, Ronnie Jack, to Halliburton Company. Method and apparatus for compensating fluid flow for a variable physical condition. 3,854,038, Cl. 235-151.340.

McKinney, Daniel F.: *See*—
Stanislawski, Melvern B.; and McKinney, Daniel F., 3,853,111.

McKown, Roy P. Work support apparatus with pipe grooving tool. 3,852,917, Cl. 51-5.00b.

McLaurin, Leroy: *See*—
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McMahon, Paul E.: *See*—
Druin, Melvin L.; and McMahon, Paul E., 3,853,418.

McNeely, Arthur O.; and Kennedy, Wiley T., to Mackenhus Corporation. Dry lay-up method and apparatus for producing continuous length composite members. 3,853,656, Cl. 156-172.000.

McNeese, Leonard E.; Ferris, Leslie M.; and Smith, Fred J., to United States of America, Atomic Energy Commission. Method for removing rare earths from spent molten metallic fluoride salt mixtures. 3,853,979, Cl. 423-5.000.

McNeill, George A.: *See*—
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Mead Johnson & Company: *See*—
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Ryan, Richard P., Jr., 3,853,858.

Meadox Medicals, Inc.: *See*—
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Measurand Systems, mesne: *See*—
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Medical Laboratory Automation, Inc.: *See*—
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Medico Electronic, Inc., mesne: *See*—
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Morin, Leo G.; and Prox, Jerome R., 3,853,470.
Morin, Leo G.; and Prox, Jerome R., 3,853,473.

Meier, Franz, to Ruti Machinery Works Ltd.; formerly Honegger, Casper. Clip device on a shuttle of a loom. 3,853,154, Cl. 139-207.000.

Meiners, Jochen: *See*—
Cornelius, Wolf; Gross, Bodo; Meiners, Jochen; Blass, Eckhart; and Koch, Kurt-Henning, 3,853,929.

Meller, Oscar W.; Lovich, John W.; and Morse, Frank C., to Goodyear Aerospace Corporation. Cargo container having adjustable shelves. 3,853,239, Cl. 220-1.500.

Melnikov, Oleg Konstantinovich: *See*—
Distler, Grigory Isaakovich; Lobachev, Anatoly Nikolaevich; Vlasov, Vasily Platonovich; Melnikov, Oleg Konstantinovich; and Triodina, Nina Sergeevna, 3,853,596.

Menge, Donald C., to Troy Steel Corporation. Method of prefabricating a truss. 3,853,162, Cl. 144-326.00r.

Mercer, Donald W., to Donbee Corporation, mesne. Board game. 3,853,322, Cl. 273-134.0es.

Merck & Co.: *See*—
Pessolano, Arsenio A.; Witzel, Bruce E.; Graham, Patricia M.; Clark, Robert L.; and Shen, Tsung-Ying, 3,853,896.

Merck & Co., Inc.: *See*—
Andrews, Stuart R.; and Morse, Lewis D., 3,853,920.
Witzel, Bruce E.; Shen, Tsung-Ying; Graham, Patricia M.; Clark, Robert L.; and Pessolano, Arsenio A., 3,853,897.

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Merit Company, The: *See*—
Christian, Francis R., 3,852,856.

Mermelstein, Robert: *See*—
Buckley, David A.; Jacknow, Burton B.; Mermelstein, Robert; and , 3,853,778.

Merrick, Robert Alfred. Door retainer latch. 3,853,342, Cl. 292-262.000.

Merrill, La Vaun S., Jr., to Marathon Oil Company. Method of pumping waxy crude oil. 3,853,356, Cl. 302-66.000.

Mertens, Gerhard: *See*—
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Messer, Mayer Naoum: *See*—
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Messerschmitt-Bolkow-Blohm GmbH: *See*—
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Metallgesellschaft Aktiengesellschaft: *See*—
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Metallurgical Exoproducts Corporation: *See*—
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Metz, Anthony B. Rotary disc cutting device. 3,852,843, Cl. 15-93.000.

Metzger, Nelson D., to Amsted Industries, Incorporated. Railway coupling. 3,853,228, Cl. 213-146.000.

Meuleman, Johannes; and Jacob, Guy Michel, to U.S. Philips Corporation. Method of forming crystals by the control of volatile constituent diffusion path distances through a melt. 3,853,487, Cl. 23-301.0sp.

Meyer, Delbert H.; and Johnston, George E., to Standard Oil Company. Recovery of trimellitic acid from pseudocumene liquid phase oxidation effluent. 3,853,924, Cl. 260-346.300.

Meyer Industries, Inc.: *See*—
Healy, Gerald S., 3,852,943.

Meyer, Richard R.; Kearney, John M.; and Burnstein, Philip J., to Systems Discipline, Inc. Two stage high efficiency air filter. 3,853,510, Cl. 55-368.000.

Meyer, Wilhelm: *See*—
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Meyer, Wilhelm, to Meyer, Wilhelm. Wheelchair. 3,853,372, Cl. 297-45.000.

Meyers, Edward; Slusarchyk, Dorothy Smith; and Liu, Wen-Chih, to Squibb, E. R., & Sons, Inc. Antibiotic EM-98. 3,853,992, Cl. 424-116.000.

Mezzanotte, Mario; Caretta, Ferdinando; and Turchetti, Gianni, to Industrie Pirelli S.p.A. Radial tires provided with a sidewall stiffening circumferential structure. 3,853,163, Cl. 152-355.000.

Michalek, Jiri: *See*—
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Mickel, Larry S. Impact absorbent pad for helmet shell. 3,852,821, Cl. 2-3.00r.

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Midland-Ross Corporation: *See*—
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Miida, Kazuhiro: *See*—
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Mikelson, Artur Eduardovich: *See*—
Ioffe, Benyamin Alexandrovich; Mikelson, Artur Eduardovich; and Kirko, Igor Mikhailovich, 3,854,110.

Mikhin, Nikolai Matveevich: *See*—
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Miles, Wilbur N.: *See*—
Benjamin, Milton L.; and Miles, Wilbur N., 3,853,422.

Miller, Darrow L.; and Kaelble, David H., to North American Rockwell Corporation. Silicone elastomeric material. 3,853,805, Cl. 260-37.0sb.

Miller, Donald, to United States of America, Navy. Suction gripping device. 3,853,345, Cl. 294-64.00r.

Miller, Frank S.: *See*—
Tu, Peter K. C.; Brooke, Alan H.; and Miller, Frank S., 3,853,518.

Miller, Frederick W., III, to Extracorporeal Medical Specialties, Inc. Rigid casing for dialyzer coil. 3,853,769, Cl. 210-321.000.

Miller, Joseph Charles: *See*—
Appenzeller, Henry Albert; Miller, Joseph Charles; and Shea, Vincent, 3,853,313.

Miller, Kenneth D.; and Parker, Levi C., to Texaco, Inc. Low pour vacuum gas oil compositions. 3,853,497, Cl. 44-62.000.

Millner, Tivadar; Bartha, Laszlo; and Neugebauer, Jeno. Tungsten incandescent body containing foreign substances and procedure for its preparation. 3,853,492, Cl. 29-182.000.

Minagawa, Nobuhiko: *See*—
Tatsuta, Sumitaka; Ueno, Wataru; Minagawa, Nobuhiko; and Kurabayashi, Hiroyuki, 3,853,584.

Minchak, Robert J., to Goodrich, B. F., Company, The. Process for preparing polymers of cyclopentene. 3,853,830, Cl. 260-88.200.

Mine Safety Appliance Company: *See*—
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Mini-Track Tractor Co., Inc., The: *See*—
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Minnesota Mining & Manufacturing Company: *See*—
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Minnesota Mining and Manufacturing Company: *See*—
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Minnich, Basil H.: *See*—
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Minolta Camera Kabushiki Kaisha: *See*—
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Minot, Alain: *See*—
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Miranti, Joseph P., Jr.: *See*—
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Mirtain, Henri J., to Uniroyal S.A. Cushioned tread tire. 3,853,164, Cl. 152-361.000.

Mischiatti, Sensino Walter. Control and synchronisation of clocks. 3,852,953, Cl. 58-24.00r.

Mistretta, Charles A.; and Kelcz, Frederick, to Wisconsin Alumini Research Foundation. Compensation for patient thickness variations in differential X-ray transmission imaging. 3,854,049, Cl. 250-402.000.

Mitchell, Wallace F., to Ammco Tools, Inc. Dust collector. 3,853,517, Cl. 55-288.000.

Mitsubishi Chemical Industries Ltd.: *See*—
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Mitsubishi Yuka Kabushiki Kaisha: *See*—
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Mitsui Toatsu Chemicals, Inc.: *See*—
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Miyake, Yasuhiro: *See*—
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Mize, Erbie Gail, to Astec Industries, Inc. Mixing apparatus with dropout lower portion. 3,853,305, Cl. 259-179.000.

Mizrachy, Benjamin; and Salzman, Robert Stephen. Methods for reducing the risk of incurring venous thrombosis. 3,853,121, Cl. 128-33.000.

Moatti, Georges. Self-cleaning filter. 3,853,762, Cl. 210-108.000.

Mobil Oil Corporation: *See*—
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Moc, Milos: *See*—
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Mock, Thomas M., to American Hoist & Derrick Company. Crane load measuring means. 3,853,001, Cl. 73-133.00r.

Moe, Richard G., to United States of America, Navy. Configured blast fragmentation warhead. 3,853,059, Cl. 102-67.000.

Moelants, Felix Jan: *See*—
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Moerman, Nathan A.: *See*—
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Mohl, Wilhelm: *See*—
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Mohn, Frank, to Patents and Developments A/S. Pumping apparatus for skimming and recovering an oil layer from a body of water. 3,853,767, Cl. 210-242.000.

Mohr, William C., to Beloit Corporation. Large roll hydraulic press with pressurized fluid supports. 3,853,698, Cl. 162-358.000.

Mohri, Katsuo: *See*—
Yoshino, Takehiko; Yamane, Hisakichi; Sawabe, Eiichi; Yanagimachi, Akio; Fukuda, Masaaki; Kayano, Tatsuo; Masuda, Michio; Takezawa, Teruhiro; Mohri, Katsuo; and Nabeyama, Hiroaki, 3,854,010.

Momose, Yutaka: *See*—
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Monforts, A.: *See*—
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Monkovic, Ivo; and Lambert, Yvon, to Bristol-Myers Company. 3,14-Substituted-8-oxamorphinans. 3,853,889, Cl. 260-293.550.

Monroe, Paul S.; and Chervenak, Michael C., III, to United States of America, Atomic Energy Commission. Cold trap unit. 3,853,507, Cl. 55-269.000.

Monsanto Company: *See*—
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Lawton, Ernest L., 3,853,657.
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Montgomery, Richard Malvern: *See*—
Werner, Richard Lawrence; Montgomery, Richard Malvern; and Ridge, Martin Peter, 3,853,203.

Moore, Alvin Edward. Light-weight, wreck-resistant vehicle. 3,853,349, Cl. 296-28.00r.

Moore, Donald G.; and Leyers, William E., to Chemetron Corporation. Electromagnetic heating system which includes an automatic shielding mechanism and method for its operation. 3,854,021, Cl. 219-10.550.

Moore, Donald G., to Chemetron Corporation. Electromagnetic oven system for automatically heating variable numbers and sizes of food items or the like. 3,854,022, Cl. 219-10.550.

Moore, Norman H., to Fibreboard Corporation. Carton with easy opening feature and blank therefor. 3,853,261, Cl. 229-51.0as.

Moore, Robert R. Orthopedic knee brace. 3,853,123, Cl. 128-80.00c.

Moore, Samuel, & Company: *See*—
Stine, Clifford R., 3,853,149.

Moran, Stephen F.: *See*—
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Morehouse, Wayne: *See*—
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Morgan, Thomas D., to Phillips Petroleum Company. Spark plug. 3,854,067, Cl. 313-130.000.

Mori, Takasi; Takaku, Sakae; and Suzuki, Seikichi, to Chugai Seiyaku Kabushiki Kaisha. Mycophenolic acid derivatives. 3,853,919, Cl. 260-343.300.

Mori, Yoichi; Okazaki, Nobuo; Ohtsuka, Kunio; and Iijima, Tetsuya, to Nissan Motor Company, Limited. Gear train arrangements. 3,853,023, Cl. 74-759.000.

Morin, Leo G.; and Prox, Jerome R., to Medico Electronic, Inc., mesne. Reagent and method for phosphorus determination. 3,853,469, Cl. 23-230.00b.

Morin, Leo G.; and Prox, Jerome R., to Medico Electronic, Inc., mesne. Reagent and method for glucose determination. 3,853,470, Cl. 23-230.00b.

Morin, Leo G.; and Prox, Jerome R., to Medico Electronic, Inc., mesne. Reagent and method for urea determination. 3,853,473, Cl. 23-230.00b.

Morino, Yukio: *See—*
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Morlock, Gerhard: *See—*
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Morningstar, Leroy Jack, to AMP Incorporated. Jackscrew retainer. 3,853,381, Cl. 339-92.00m.

Moroff, Helmut; and Neumann, Helmut, to Rohm GmbH. Method for treating paper with mixed thermoplastic and thermosetting acrylic resins and products thereof. 3,853,594, Cl. 117-64.00r.

Morozowich, Walter, to Upjohn Company, The. Derivatives of thiolincosaminide compounds. 3,853,843, Cl. 260-210.00r.

Morozowich, Walter, to Upjohn Company, The. Prostaglandin F type 9-monoacrylates. 3,853,963, Cl. 260-488.00r.

Morrill, Eugene H.: *See—*
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Morse, Lewis D.: *See—*
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Mostow, John Hinckley; and Stima, Joseph Frank, to Colgate-Palmolive Company. Granular non-dusting enzyme product for detergent use. 3,853,780, Cl. 252-132.000.

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Cook, John N.; and Madalinski, Charles L., Jr., 3,854,016.

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Muramatsu, Sadao, to Yashica Co., Ltd. Differential amplifiers. 3,854,101, Cl. 315-30.00d.

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Music, John D.; and Edwards, Patrick J. Rotatable track-mounted shutter blinds. 3,853,169, Cl. 160-172.000.

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Naaman, Antoine E., to Massachusetts Institute of Technology. Tridimensional fiber reinforcement of Portland cement concrete matrices. 3,852,930, Cl. 52-664.000.

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Yoshino, Takehiko; Yamane, Hisakichi; Sawabe, Eiichi; Yanagimachi, Akio; Fukuda, Masaaki; Kayano, Tatsuo; Masuda, Michio; Takezawa, Teruhiro; Mohri, Katsuo; and Nabeyama, Hiroaki, 3,854,010.

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Nalco Chemical Company: *See—*
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Nemeth, Edward J., to United States Steel. Use of reducing gas by coal gasification for direct iron ore reduction. 3,853,538, Cl. 75-35.000.

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Ney, Robert Johan. Fiber optical image magnifier panel and method of manufacture. 3,853,658, Cl. 156-180.000.

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Nye, Dudley D., Jr.; Carlson, Peter J.; and Keith, Arley, Jr., to Airpax Electronics Inc. Temperature stable one-shot multi-vibrator. 3,854,058, Cl. 307-273.000.

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Olbert, Alois; and Mertens, Gerhard, to Dunlop Limited. Manufacture of tires. 3,853,653, Cl. 156-128.00r.

Olcott, Eugene L., to Atlantic Research Corporation, mesne. Tapered carbon/pyrolytic graphite composite material. 3,853,586, Cl. 117-37.00r.

Oldack, Richard C.; Raines, Charles C.; and Montgomery, Richard L., to Firestone Tire & Rubber Company, The. High stress-low elongation rubber composition. 3,853,796, Cl. 260-5.000.

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O'Rourke, John C., to TRW, Inc. Cable-suspended, liner-supported submersible pump installation with locking discharge head. 3,853,430, Cl. 417-360.000.

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Ota, Takeshi: *See—*
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Boyadjieff, George I.; and Otsap, Ben A., 3,853,175.

Otsuka, Jiro. Cigarette butt receptacle. 3,853,263, Cl. 232-43.100.

Ott, Albert. Device for measuring the thickness of layers with a radionuclide irradiating the layer. 3,854,042, Cl. 250-308.000.

Outboard Marine Corporation: *See—*
Smale, William B., 3,853,201.

Owens-Corning Fiberglas Corporation: *See—*
Stapleford, Stuart H.; and Nutter, Charles E., 3,853,683.

Owens-Illinois, Inc.: *See—*
Chvatal, Theodor L., 3,853,568.
Gray, Don N.; and Young, Chung-Chang, 3,853,731.
Levene, Leon; and Thomas, Ian M., 3,853,673.
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Ozemblovskaya, Galina Tadeushevna: *See—*
Kestner, Olga Evgenievna; Vinokurov, Vasily Ivanovich; Axenova, Irina Petrovna; Ozemblovskaya, Galina Tadeushevna; Shakhpenderian, Amayak Pogosovich; Shagurin, Anatoly Zlexeevich; Popova, Larisa Nikolaevna; Zverev, Ivan Ivanovich; Kokonin, Sergei Sergeevic; Matveev, Anatoly Alexandrovich; Petrunin, Alexandr Mikhailovich; Sherstnev, Ebgeny Sergeevich; Akimtsev, Anatoly Alexeevich; Oblasti, Balashikha Moskovskoi; and Sklyarov, Nikolai Mitrofanovich, 3,853,493.

Packaging Corporation of America: *See—*
Beder, Samuel Lewis; Toth, Alexander; and Persak, Warren Richard, 3,853,286.
Boyd, James W., 3,853,221.

Pactide Corporation: *See—*
Rogers, Franklin A., 3,853,478.

Padjen, George; and Brugger, Joseph A., to Bethlehem Steel Corporation. Apparatus for quenching molten coatings. 3,853,306, Cl. 266-3.00r.

Pages, Michel, to Rhone-Poulenc S.A. Support elements for tubular membranes and process for manufacturing them. 3,853,757, Cl. 210-23.000.

Paiva, Manuel S., to Leesona Corporation. Bobbin lifting and orienting mechanism. 3,853,215, Cl. 198-236.000.

Pak-Well Corporation: *See—*
Tucker, Carl L.; Schaible, Robert M.; and Cooper, Frank B., 3,853,262.

Paladino, Dick. Oboe fingering system and mouthpiece. 3,853,033, Cl. 84-380.000.

Palazzetti, Mario; and Grisotto, Franco, to Fiat Societa per Azioni. Sealed connector for insulated conductors. 3,853,385, Cl. 339-96.000.

Palmer, Bryan B.: *See—*
Davis, Woodrow W., 3,853,515.

Palmer, John M.: *See—*
Demaine, David G. A.; and Palmer, John M., 3,853,387.

Palmer, Merle A.: *See—*
Bitsura, Michael P.; Brevko, Robert; and Palmer, Merle A., 3,852,937.

Paltier Corporation, The: *See—*
Skubic, Leroy F.; and Blozis, Peter P., 3,853,072.

Panhandle Eastern Pipe Line Company: *See—*
Aldag, David B., 3,853,087.

Papsco, William G. Modular wall construction. 3,852,926, Cl. 52-241.000.

Parker, Dorothy C.: *See—*
Parker, Joseph D., 3,853,694.
Parker, Joseph D.; Hergert, Richard E.; and Eggen, Richard W., 3,853,697.

Parker, Edward I. Electronic object comparator using inductive sensors and frequency comparison. 3,854,084, Cl. 324-34.00r.

Parker, Joseph D.; deceased (by Parker, Dorothy C.; executrix), to Beloit Corporation. Paper machine flow channel with a flexible plate projecting into the flow stream of act as an oscillator. 3,853,694, Cl. 162-216.000.

Parker, Joseph D.; deceased (by Parker, Dorothy C.; executrix); Hergert, Richard E.; and Eggen, Richard W., to Beloit Corporation. Papermaking machine headbox with an upwardly inclined slice chamber portion, an acurate portion, and a downwardly inclined potion and containing flexible trailing member. 3,853,697, Cl. 162-343.000.

Parker, Levi C.: *See—*
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Parkinson, Robert E., to United States Steel Corporation. Coated metal fasteners. 3,853,606, Cl. 117-128.400.

Parmelee Industries, Inc.: *See—*
Watkins, Willis T.; and Sankpill, Lester Alan, 3,852,822.

Parran, Mario A., to General Motors Corporation. Snap ring locking device. 3,853,413, Cl. 403-318.000.

Parsons, Frederick L. Positive displacement rotary machine. 3,853,434, Cl. 418-55.000.

Partos, Richard D. Isopropyl-cyanophenyl alkylsulfonates. 3,853,939, Cl. 260c456.00r.
Pasquali, Joseph W.: *See—*
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Patents and Developments A/S: *See—*
Mohn, Frank, 3,853,767.
Patros, Carl Thomas: *See—*
Martin, Jerry Thomas; and Patros, Carl Thomas, 3,853,773.
Patton, David L., to Eastman Kodak Company. Method for splicing web end portions with plastic rivets. 3,853,654, Cl. 156-157.000.
Patton, Edward Donald. Pipe tool. 3,853,132, Cl. 131-243.000.
Pavlenko, Alexandra Semenovna: *See—*
Nikolaev, Jury Diomidovich; Ljuskin, Sergei Nikolaevich; Koletvinov, Vladimir Ivanovich; and Pavlenko, Alexandra Semenovna, 3,853,550.
Payne, Wesley J., to United States of America, Army, mesne. Electron device incorporating a microchannel secondary emitter. 3,854,066, Cl. 313-105.000.
Peacha, Ernst, to Bielomatik Leuze & Co. Method of and fixture for welding flexible members into a frame. 3,853,655, Cl. 156-159.000.
Peak Components Limited: *See—*
Barnett, John David; and Barlow, George Brian, 3,853,000.
Pearson, Bernard A., to Smith-Williston, Inc. Method of inserting buttons in a drilling head. 3,852,874, Cl. 29-525.000.
Peck, Gordon H., to Autotronic Controls Corporation. Vehicular performance analyzer. 3,853,002, Cl. 73-133.00r.
Pedginski, James J.; and Peper, William A., to Minnesota Mining and Manufacturing Company. Sewing tape. 3,853,595, Cl. 117-68.500.
Peer, Charles F.: *See—*
Campagnuolo, Carl J.; Peer, Charles F.; and Rawlings, David L., 3,853,066.
Peichl, Robert: *See—*
Dorr, Karl-Heinz; Grimm, Hugo; Tacke, Michael; and Peichl, Robert, 3,853,502.
Pellegrino, Gustave, Jr.: *See—*
Bambara, Joseph E.; and Pellegrino, Gustave, Jr., 3,854,080.
Pelton & Crane Company: *See—*
Leffler, Dennis Frank, 3,853,350.
Pelton, Charles R., to Pelton Company, Inc., The. Servo hydraulic vibrator with phase error correction. 3,854,118, Cl. 340-17.000.
Pelton Company, Inc., The: *See—*
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Pelzig, Josef. Polyvinyl acetate [dextrin] C_3 to C_8polyhydric alcohols material for novelty items and arts and crafts applications. 3,853,797, Cl. 260-17.4st.
Pennella, John J.: *See—*
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Pennisi, Joseph V.; and Connery, Arthur W., to Nashua Corporation, mesne. Tape winding mandrel and apparatus. 3,853,280, Cl. 252-56.900.
Pennwalt Corporation: *See—*
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D'Angelo, Antonio Joseph; and McKellin, Wilbur H., 3,853,957.
Peper, William A.: *See—*
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Pereda, Eugene F. Slot antenna apparatus for measuring the detonation of an explosive material. 3,852,994, Cl. 73-35.000.
Perego, Roberto: *See—*
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Peres, Anthony R., to Peres Electronic Machinery, Inc. Method for automatically opening and emptying containers into a blending tank. 3,853,620, Cl. 134-6.000.
Peres Electronic Machinery, Inc.: *See—*
Peres, Anthony R., 3,853,620.
Perkins, Garry R., to Spotmails, Inc. Self-clearing nose section for a powered fastener-driving tool. 3,853,257, Cl. 227-123.000.
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Persak, Warren Richard: *See—*
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Yevick, George J., 3,853,395.
Peschel, Heinz; and Radtke, Manfred, to Eastman Kodak Company. Film threading device for a motion picture projector. 3,853,275, Cl. 242-195.000.
Pessolano, Arsenio A.: *See—*
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Pessolano, Arsenio A.; Witzel, Bruce E.; Graham, Patricia M.; Clark, Robert L.; and Shen, Tsung-Ying, to Merck & Co. Certain diloweralkylamino-methylene (or ethylene)-2(1H)pyridone. 3,853,896, Cl. 260-296.00r.
Pestka, John A., to Illinois Tool Works, Inc. Panel mounting fastener. 3,852,849, Cl. 24-73.00p.
Peters, Gary J.; and Hermann, Stanley R., to NCR Corporation. Processes relating to sensible coatings and transfer ribbons for plastic cards thereto. 3,853,660, Cl. 156-230.000.
Peters, Norman J., to DEC International Inc. Cheese making apparatus. 3,853,241, Cl. 220-344.000.
Peterson, Adolphe C. Dual system circuit power means. 3,853,194, Cl. 180-7.00j.
Peterson, John Ivan; Friauf, Walter S.; and Leighton, Stephen B., to United States of America, Health, Education and Welfare. High precision fluorometer for measuring enzymatic substrates in tissue. 3,854,050, Cl. 250-429.000.
Petrunin, Alexandr Mikhailovich: *See—*
Kestner, Olga Evgenievna; Vinokurov, Vasily Ivanovich; Axenova, Irina Petrovna; Ozemblovskaya, Galina Tadeushevna; Shakhpenderian, Amayak Pogosovich; Shagurin, Anatoly Zlexeevich; Popova, Larisa Nikolaevna; Zverev, Ivan Ivanovich; Kokonin, Sergei Sergeevic; Matveev, Anatoly Alexandrovich; Petrunin, Alexandr Mikhailovich; Sherstnev, Ebgeny Sergeevich; Akimtsev, Anatoly Alexeevich; Oblasti, Balashikha Moskovskoi; and Sklyarov, Nikolai Mitrofanovich, 3,853,493.
Petutschnigg, Karl. Modulation mechanism for harps. 3,853,030, Cl. 84-266.000.
Pfarrwaller, Erwin, to Sulzer Brothers Ltd. Gripper shuttle for weft threads in a loom. 3,853,152, Cl. 139-125.000.
Pfizer Inc.: *See—*
Lombardino, Joseph G., 3,853,862.
Phares, Lindsey J., to Raymond International, Inc. Pile structure. 3,852,971, Cl. 61-53.580.
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Morgan, Thomas D., 3,854,067.
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Tieszen, Dale O., 3,853,824.
Williams, Ralph P., 3,853,775.
Pierce, Ronald F., to NRM Corporation. Rotary seal. 3,853,328, Cl. 277-72.00r.
Pierce-All Manufacturing Limited: *See—*
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Pike, John E.: *See—*
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Pilkington Brothers Limited: *See—*
Dickinson, George Alfred; and Nixon, Frank, 3,853,523.
Pinke, Paul A.; and Massie, Stephen N., to Universal Oil Products Company. Cyclialkylation of amines. 3,853,887, Cl. 260-293.640.
Pinnow, Douglas Arthur; and Van Uitert, Le Grand Gerard, to Bell Telephone Laboratories, Incorporated. Optical transmission line. 3,853,384, Cl. 350-96.0wg.
Pircon, Ladislav J., to Purity Corporation, The. Pollution control apparatus and method. 3,853,506, Cl. 55-91.000.
Pirnie, Robert M., III, to Communication Equipment & Contracting Co., Inc. Area unit status system. 3,854,009, Cl. 179-2.00a.
Pitney-Bowes, Inc.: *See—*
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Plank, Don A., to Exxon Research & Engineering Company. Nickel salts of arylsulfonic acids as ultraviolet stabilizers for light sensitive polymers. 3,853,810, Cl. 260-45.75n.
Plempel, Manfred: *See—*
Eiter, Karl; Hebenbrock, Klaus-Friedrich; and Plempel, Manfred, 3,853,852.
Plough, Inc.: *See—*
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Plummer, Thomas Frederick: *See—*
Price, Samuel; Plummer, Thomas Frederick; Fowler, Robert James; Hill, Edward Reuben; Woodwards, Cecil; and Harrington, Ewart Arthur, 3,852,987.
Poggio, Sebastiano, to Verrina S.p.A. Bending press. 3,852,991, Cl. 72-389.000.
Polaroid Corporation: *See—*
Land, Edwin H.; and Bloom, Stanely M., 3,853,562.
Poletto, John Frank: *See—*
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Pollack, William: *See—*
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Polshikov, Ivan Vasilievich; Kurdin, Lev Nikolaevich; and Titarenko, Alexandr Timofeevich. Machine for wrapping continuous cores in tape material. 3,853,667, Cl. 156-422.000.

Polva-Nederland N.V.: *See—*
Acda, Petrus Marinus, 3,853,450.

Polymer Processing Research Institute Ltd.: *See—*
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Porath, Jerker Olof; Fornstedt, Nermin; Sundberg, Lars; Eklund, Conny; and Axen, Rolf, to Exploaterings Aktiebolaget T.B.F. Coupling biologically active substances to oxirane-containing polymers. 3,853,708, Cl. 195-68.000.

Porret, Daniel: *See—*
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Porte, Pierre, to Rhone-Poulenc-Textile. Process for the manufacture of continuous filament nonwoven web. 3,853,651, Cl. 156-73.000.

Porter, Maurice Read: *See—*
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Posey, Lawrence. Router. 3,853,160, Cl. 144-137.000.

Post, Willem, to Universal Oil Products Company. Movable demister system. 3,853,514, Cl. 55-242.000.

Poster Products, Inc.: *See—*
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Pottage, Paul Richmond: *See—*
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Potts, James E.: *See—*
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Potts, John D.; and Kirsch, Francis William, to Sun Research and Development Co. Process for preparing metal zeolite catalyst compositions. 3,853,787, Cl. 252-455.00z.

Poucher, Frederick W., Jr.: *See—*
Sudar, Seymour; and Poucher, Frederick W., Jr., 3,853,484.

Poulos, Gus L., to Soectra McIntosh Corporation. Taper leaf spring blank. 3,853,310, Cl. 267-47.000.

Pouzadoux, Jean, to Thomson-CSF. Push-pull amplifying devices with class D transistorized amplifiers. 3,854,100, Cl. 330-15.000.

PPG Industries, Inc.: *See—*
Anderson, Carl C.; and Sturni, Lance C., 3,853,803.
Castine, William A., Jr., 3,853,219.
Darlington, William B.; and Foster, Robbie T., 3,853,721.
Fahey, Dentis M., 3,853,605.
Korach, Malcolm; and Foster, Robbie T., 3,853,720.
Mack, Robert, 3,853,723.
Rigler, Donald T.; and Johnsen, Knut J., 3,853,722.
Schwenninger, Ronald L., 3,853,524.

Prahl, Frederick A., Jr.; and Dunlap, Robert B., to Compo Industries, Inc. Apparatus for making a mold for reproducing parts of shoes and the like. 3,853,445, Cl. 425-175.000.

Prasad, Raj Nandan; and Stein, Herman Hal, to Abbott Laboratories. Inosine-5-carboxylates. 3,853,846, Cl. 260-211.50r.

Prebil, Stanley. Motor rapid warming device. 3,853,270, Cl. 237-12.30b.

Preload Company, Inc., The: *See—*
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Presco, Albert: *See—*
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Pretorius, Hillius, to Super Braai (Proprietary) Limited. Cooking device. 3,853,046, Cl. 99-449.000.

Price, Charles R.; and Abercrombie, William F., Jr., to Huber, J. M., Corporation. Controlling the leaching of kaolin clay. 3,853,984, Cl. 423-131.000.

Price, Samuel; Plummer, Thomas Frederick; Fowler, Robert James; Hill, Edward Reuben; Woodwards, Cecil; and Harrington, Ewart Arthur, to General Motors Corporation. Forming transverse corrugations in a tubular blank. 3,852,987, Cl. 72-193.000.

Priddle, John Edward; and Richardson, Ronald William, to Imperial Chemical Industries Limited. Method for quenching glass laminates. 3,853,693, Cl. 161-203.000.

Priola, Aldo; Cesca, Sebastiano; and Ferraris, Giuseppe, to Snam Progetti, S.p.A. Copolymers of vinyl ethers and cyclic polyenes containing a system of conjugated double bonds and process for the preparation thereof. 3,853,829, Cl. 260-88.10r.

Prochazka, Svante, to General Electric Company. Hot pressed silicon carbide. 3,853,566, Cl. 106-44.000.

Prochko, George M.: *See—*
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Proll, Arthur T.: *See—*
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Morin, Leo G.; and Prox, Jerome R., 3,853,470.
Morin, Leo G.; and Prox, Jerome R., 3,853,473.

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Psaar, Hubertus: *See—*
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Pukhly, Zhanetta Alexandrovna: *See—*
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Purity Corporation, The: *See—*
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Pusch, Allen A., to Foremost International Industries, Ltd. Vehicle track. 3,853,359, Cl. 305-35.0eb.

Pyzel, Ewald D.; and Codding, Harold E. Safety release ski boot system. 3,852,896, Cl. 36-2.5al.

Quack, Paul, to Scharman & Co. Horizontal drilling and milling machine with a headstock movable upwardly and downwardly on guiding means. 3,853,423, Cl. 408-235.000.

Quenelle, Robert C., to IMS Corporation. Display device and control circuit therefor. 3,854,073, Cl. 315-200.00a.

Quinlan, William J.; and Huver, Laurence L., to Hastings Manufacturing Company. Wiper arm adapter for converting a single wiper arm to an articulating wiper arm. 3,852,845, Cl. 15-250.230.

Quiram, Ronald G., to Poloron Products of Indiana, Inc. Self-propelled vehicle drive. 3,853,197, Cl. 180-19.00r.

Raab, Stefan: *See—*
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Radon Development Corporation: *See—*
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Radtke, Manfred: *See—*
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Ragard, Phillip A., to Universal Instruments Corporation. Semi automatic electronic component assembler. 3,852,865, Cl. 29-203.00b.

Rager, Horst: *See—*
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Raguse, Roger C., to Scholl, Inc. Adhesive tape. 3,853,598, Cl. 117-76.00a.

Raines, Charles C.: *See—*
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Raith, Richard L., to Hauserman, Inc. Elevated flooring system and panel therefor. 3,852,928, Cl. 52-263.000.

Ralston Purina Company: *See—*
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Ramanathan, Visvanathan: *See—*
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Randall, David I.: *See—*
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Rao, K. Jagan Moran: *See—*
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Rasanen, Kaarlo E. Powered jumping stick. 3,853,195, Cl. 180-8.00r.

Ratts, Kenneth Wayne, to Monsanto Company. Plant regulation with 2-halo-2',6'-dialkyl-N-acyl-oxymethyl-acetanilides. 3,853,531, Cl. 71-76.000.

Rau, Karlheinz. Method for making hollow cylinders of vitreous silica by vacuum heating. 3,853,520, Cl. 65-18.000.

Raudat, John L.: *See—*
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Rawlings, David L.: *See—*
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Rayburn, James W.: *See—*
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Raymond International, Inc.: *See—*
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Raytheon Company: *See—*
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Razzano, John S., to General Electric Company. Process for producing silanol end-stopped polymers of low molecular weight. 3,853,932, Cl. 260h448.20e.

RCA Corporation: *See—*
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Read, Reginald A., Jr., to Regdon Corporation. Method of manufacturing a well for a dashpot assembly. 3,852,871, Cl. 29-445.000.

Reba, Imants: *See—*
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Redland Bricks Limited: *See—*
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Reduska, William: *See—*
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Regdon Corporation: *See—*
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Regency Electronics, Inc.: *See—*
Schonegg, Louis E., 3,854,093.
Towler, James F., 3,854,094.

Reichel, Maximilian Karl; Ruckert, Hans; and Urban, Walter, to Hoechst Aktiengesellschaft. Process for the preparation of screen printing stencils using intermediate support for light sensitive layer. 3,853,561, Cl. 96-36.400.

Rein, Burton Maxwell; and Weinstein, Benjamin, to Mobil Oil Corporation. Aliphatic monoketones as tobacco plant sucker growth control agents. 3,853,532, Cl. 71-78.000.

Reiner, Lawrence L.; and Brady, William A. Combined game of chance and skill. 3,853,324, Cl. 273-142.00e.

Reinis, Gedeminas J.; and Nelson, Kyler F., to Xerox Corporation. Method of color imaging a layer of electrically photosensitive agglomerates. 3,853,555, Cl. 96-1.200.

Rembaum, Alan: *See—*
Yen, Shiao-Ping S.; and Rembaum, Alan, 3,853,804.

Republic Industries, Inc.: *See—*
Slaybaugh, Loren E., 3,852,846.

Research Engineering & Manufacturing, Inc., mesne: *See—*
Yamamoto, Yoshio, 3,852,992.

Reterson, Ronald Thomas; and Stein, Israel Mayer, to Clinical Data Services, Inc. Method and system for display of electrocardiographic (egg) signals. 3,853,119, Cl. 128-2.06r.

Reuschel, Konrad; and Dietze, Wolfgang, to Siemens Aktiengesellschaft. Method of producing a hollow body of semiconductor material. 3,853,974, Cl. 264-81.000.

Rey, Hans-Georg: *See—*
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Rittersdorf, Walter; Rey, Hans-Georg; and Rieckmann, Peter, 3,853,471.
Rittersdorf, Walter; Guthlein, Werner; Berger, Dieter; Rey, Hans-Georg; and Rieckmann, Peter, 3,853,476.

Rey, Hans-George: *See—*
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Reynolds, Charles Edward; and Woolley, Harold Oakley, Jr., to AMP Incorporated. Multiple circuit selector switch assembly having movable contact means adapted to retain itself in closed circuit position. 3,854,018, Cl. 200-5.00a.

Reynolds Metals Company: *See—*
Singleton, Ogle R., Jr., 3,853,547.

Reynolds Products Inc.: *See—*
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RFL Industries, Inc.: *See—*
Kratt, Edward J. A., III; and Klapper, Jacob, 3,854,099.

Rhedey, Paul: *See—*
Brown, John Alexander; and Rhedey, Paul, 3,853,793.

Rhodes, Charles W., to Burden, Alfred L. Oil filter removing tool. 3,853,026, Cl. 81-91.00r.

Rhodes, Jerome H., to Monsanto Company. Method for improving the bonding of nylon filaments by the use of a hydrogen halide. 3,853,659, Cl. 156-181.000.

Rhone-Poulenc S.A.: *See—*
Challier, Jean-Louis; Jeanmart, Claude; and Messer, Mayer Naoum, 3,853,880.
Pages, Michel, 3,853,757.

Rhone-Poulenc-Textile: *See—*
Porte, Pierre, 3,853,651.

Rich, Alan H. Aircraft proximity alert. 3,854,139, Cl. 343-112.0ca.

Rich, Joseph A., to General Electric Company. Shield structure for vacuum arc discharge devices. 3,854,068, Cl. 313-240.000.

Richard Manufacturing Company: *See—*
Treace, James T., 3,852,881.

Richards Manufacturing Company: *See—*
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Richardson, Ronald William: *See—*
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Richardson-Merrell Inc.: *See—*
Grisar, J. Martin; and Claxton, George P., 3,853,855.
Grunwell, Joyce F.; and Benson, Harvey D., 3,853,927.

Richey, Thomas B. Process for treating lanolin and lanolin derivatives. 3,853,930, Cl. 260-428.000.

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Sigrud, Donald L.; Fields, Carleton M.; Rickel, Ernest R.; and Cline, Joseph A., 3,852,854.

Rickert, Walter; and Justus, Siegfried. Propellant charge for shells having high initial velocity. 3,853,057, Cl. 102-49.200.

Ricoh Co., Ltd.: *See—*
Namika, Ryochi, 3,853,552.

Ridge, Martin Peter: *See—*
Werner, Richard Lawrence; Montgomery, Richard Malvern; and Ridge, Martin Peter, 3,853,203.

Ridosh, Michael H., Jr.: *See—*
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Rieckmann, Peter: *See—*
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Rigler, Donald T.; and Johnsen, Knut J., to PPG Industries, Inc. Method of producing prilled sodium hydroxide from mercury cell sodium hydroxide. 3,853,722, Cl. 204-99.000.

Rimoldi, Virginio & C., S.p.A.: *See—*
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Riordan, William J.; and Foster, George B., to Kidde, Walter, Company, Inc. Burner control apparatus. 3,853,455, Cl. 431-80.000.

Rioux, Christian; and Lucidarme, Jean, to Agence Nationale de Valorisation de la Recherche Anvar. Device for increasing the pressure of a conductive liquid and unipolar dynamo incorporating said device. 3,854,065, Cl. 310-178.000.

Risener, George W. Bottle decapping system. 3,852,867, Cl. 29-208.00b.

Risher, Frederick L.: *See—*
Braginetz, Paul A.; and Risher, Frederick L., 3,852,880.

Rist, Michel, to Societe Anonyme Francaise du Ferodo. Brake with braking member having a ring, especially for automobile vehicles. 3,853,207, Cl. 188-76.000.

Ritter, Elmar; and Pulker, Hans K., to Balzers Patent- und Beteiligungs-AG. Low-loss, highly reflective multilayer coating system formed of alternate highly refractive and low-refraction oxide layers. 3,853,386, Cl. 350-164.000.

Rittersdore, Walter; Rey, Hans-George; Guthlein, Werner; and Rieckmann, Peter, to Boehringer Mannheim GmbH. Dianostic test strip for the detection of components of body fluids. 3,853,472, Cl. 23-230.00b.

Rittersdorf, Walter; Berger, Dieter; Rey, Hans-Georg; and Rieckmann, Peter, to Boehringer Mannheim GmbH. Diagnostic composition for the detection of urobilinogens. 3,853,466, Cl. 23-230.00b.

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Rizzi, Albert Daniel: *See—*
Barnard, Cecil Percy; Mulvany, Richard Burke; and Rizzi, Albert Daniel, 3,853,415.

Robbins, Robert: *See—*
Williams, Heyward Sturges; and Robbins, Robert, 3,854,057.

Roberts, John H.; and Temp, Gordon L., to Trane Company, The. Refrigeration compressor defining oil sump containing an electric lubricant pump. 3,853,433, Cl. 417-423.000.

Robertshaw Controls Company: *See—*
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Robertson, Alastair Agnew: *See—*
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Robertson, H. H., Company: *See—*
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Shuman, Dennis A.; and Robins, Roland K., 3,853,844.

Robock, Klaus: *See—*
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Rocher, George, to Metallurgical Exoproducts Corporation. Apparatus for ladle additions. 3,853,308, Cl. 266-34.00t.

Rock, Frank C.: *See—*
Cadwell, Robert M.; and Rock, Frank C., 3,853,267.

Rockwell International Corporation: *See—*
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Nehr, Charles W.; and Davis, George A., 3,853,208.
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Rodermund, Gerd: *See—*
Rodermund, Gerd; and Kappus, Helmut (said Helmut assor. to said), 3,852,868.

Rodermund, Gerd; and Kappus, Helmut, said Helmut assor. to said Rodermund, Gerd. Machine for the manufacture of garlands. 3,852,868, Cl. 29-208.00d.

Rodriquez, David G.: *See—*
Cox, Thomas L.; and Rodriquez, David G., 3,853,670.

Rogers, Eugene D. Flow control device. 3,853,784, Cl. 252-359.00e.

Rogers, Franklin A., to Pactide Corporation. Solute metering apparatus. 3,853,478, Cl. 23-267.00r.

Rogozhin, Sergei Vasilievich; and Davankov, Vadim Alexandrovich. Chromatographic method for the separation of the optical isomers. 3,853,906, Cl. 260-309.000.

Rohm & Haas Company: *See—*
Bortnick, Newman M.; Niederhauser, Warren D.; and Smiley, Leonard H., 3,853,968.

Rohm and Haas Company: *See—*
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Rohm GmbH: *See—*
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Roland, Murray C., to International Harvester Company. Unitary cylinder with piston retaining means. 3,853,038, Cl. 92-128.000.

Roman, Steven A., to Shell Oil Company. Piperidine insect control agents. 3,853,888, Cl. 260-293.510.

Romankiw, Lubomyr Taras, to International Business Machines Corporation. Elimination of undercut in an anodically active metal during chemical etching. 3,853,715, Cl. 204-15.000.

Romano, Enrico. Fluid-operated device for raising warp yarns in looms. 3,853,150, Cl. 139-55.000.

Rosa, Richard J., to AVCO Everett Research Laboratory, Inc. Magnetohydrodynamic generator arc resistant electrodes. 3,854,061, Cl. 310-11.000.

Roscow, Ellis J.: *See—*
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Rosemont Inc.: *See—*
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Rosenberg, Edgar N.; and Moran, Stephen F., to United States of America, Navy. Mechanical retriever. 3,853,082, Cl. 114-51.000.

Rossi, Alberto, to Ciba-Geigy Corporation. 4-[para-(1-hydroxyethyl)-phenyl] piperidines. 3,853,892, Cl. 260-293.760.

Roszyk, Leon M.: *See—*
Komatsu, Ikuo I.; Rieckman, Roger A.; and Roszyk, Leon M., 3,853,133.

Roth, Edwin S.: *See—*
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Rousseau, Robert J.; Robins, Roland K.; and Ivanovics, George A., to ICN Pharmaceuticals, Inc. 5-N-aminoacyl-5-aminouridines. 3,853,845, Cl. 260-211.50r.

Roussel-UCLAF: *See—*
Clemence, Francois; and Le Martret, Odile, 3,853,875.

Roy, Edward M.: *See—*
Kaufman, Martin H.; and Roy, Edward M., 3,853,645.

Roye, Cleveland E., to General Dynamics Corporation. Diffusion bond riveting system. 3,854,030, Cl. 219-150.000.

Rubens, Harry Ernest. Shoe wear element. 3,852,898, Cl. 36-73.000.

Rubens, Louis C., to Dow Chemical Company, The. Foam composites for filling enclosed spaces. 3,853,684, Cl. 161-160.000.

Rubio, Manuel Jesus, to Barrera, Roberto Gonzalez. Tortilla and process using sorbic acid and its salts. 3,853,997, Cl. 426-151.000.

Rubio, Manuel Jesus, to Barrera, Roberto Gonzalez. Tortilla and process using methyl, ethyl, butyl, and propyl esters of para-hydroxybenzoic acid. 3,853,998, Cl. 426-151.000.

Ruckert, Hans: *See—*
Reichel, Maximilian Karl; Ruckert, Hans; and Urban, Walter, 3,853,561.

Rudd, Chris H. Flotation type water sweep boom and methods. 3,852,965, Cl. 61-1.00f.

Ruddell, James Nelson; and Todd, Herbert Alexander Conway. Yarns, tows, and fibers having differential shrinkability. 3,852,948, Cl. 57-140.00r.

Rudolph, Werner: *See—*
Hellerbach, Joseph; Walser, Armin; Bretschneider, Hermann; and Rudolph, Werner, 3,853,953.

Ruetman, Sven H., to Dow Chemical Company, The. Heptachloro-5H-1-pyridine and a method for the preparation thereof. 3,853,885, Cl. 260-290.00r.

Rundell, John Trethowan; and Pottage, Paul Richmond, to Tate & Lyle Limited. Separation of suspended solids from liquids. 3,853,616, Cl. 127-48.000.

Runge, Ernst-Georg; and Klar, Erich, to Siemens Aktiengesellschaft. Apparatus for determining neutron flow density over a large area in a nuclear reactor. 3,854,048, Cl. 250-390.000.

Rusch, Raymond: *See—*
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Rush, Robert L.; and Vlastelica, Daniel L., to Technicon Instruments Corporation. Turbidity reduction in serum and plasma samples using polyoxyethylated lauric acid compounds. 3,853,465, Cl. 23-230.00b.

Russell, Harding M.: *See—*
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Ruszczycky, Mark M.: *See—*
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Ruti Machinery Works Ltd.; formerly Honegger, Casper: *See—*
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Van Duynhoven, Adrianus Henricus; and Kaalverink, Gerardus Hendrikus, 3,853,153.

Rutten, Werner, to Huber, Anton, GmbH & Co. KG. Sterilizer for rubber parts. 3,853,622, Cl. 134-25.00r.

Ryan, Richard P., Jr., to Mead Johnson & Company. Pyrroloquinazoline derivatives. 3,853,858, Cl. 260-240.00e.

Rybicki, Robert C., to United Aircraft Corporation. Elastomeric helicopter rotor head with dynamic and static blade coning and droop stops. 3,853,426, Cl. 416-140.000.

Rydell, Robert A.: *See—*
Tretter, Vincent J., Jr.; Stefensen, Leslie M.; and Rydell, Robert A., 3,853,505.

Ryland, Earvin. Portable electric quiz annuciator. 3,852,894, Cl. 35-48.00r.

Ryohsei Plastic Industry Co., Ltd.: *See—*
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Sabbah, Benjamin: *See—*
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Sabla, Paul E.: *See—*
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Saito, Chiaki: *See—*
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Saito, Masahiro: *See—*
Ishiai, Tamio; Aigami, Koji; Nishii, Tasaku; and Saito, Masahiro, 3,853,652.

Saito, Toshiaki, to Kabushiki Kaisha Suwa Seikosha. Fixing structure of plastic member. 3,853,312, Cl. 267-152.000.

Sakakura, Akira; Taguchi, Satoru; Wada, Toshiya; Ueno, Kiyoshi; and Yamamoto, Takaaki, to Nippon Steel Corporation. Method for producing single-oriented silicon steel sheets having high magnetic induction. 3,853,641, Cl. 148-111.000.

Sakashita, Masahira: *See—*
Ishikawa, Tatsuo; Yamashita, Keiji; Okubo, Norio; Sakashita, Masahira; Okamoto, Arimichi; and Kusunose, Tetsuhiro, 3,853,687.

Sale, Amedeo Omodei, to Gruppo Lepetit S.p.A. Substituted 2-benzoylisoxazolidines. 3,853,903, Cl. 260-307.00f.

Salomonsson, Nils Arvid; and Torstensson, Bo Goran Torsten, to Kommanditbolaget United Stirling (Sweden) AB & Co. Heat exchanger pre-heating combustion air in a stirling cycle engine. 3,852,961, Cl. 60-517.000.

Salsbury, Phillip J.: *See—*
Amelio, Gilbert F.; and Salsbury, Phillip J., 3,853,634.

Salzman, Robert Stephen: *See—*
Mizrachy, Benjamin; and Salzman, Robert Stephen, 3,853,121.

Sancho, Joseph; and Elliott, Willie, 20% interest to Lee, Raymond, Organization, Inc., The. Auxiliary safety wheel. 3,853,333, Cl. 280-150.00a.

Sanders Associated, Inc.: *See—*
Baumel, Irwin D.; Moerman, Nathan A.; and De Meo, Attilio A., 3,854,004.

Sandoz Ltd.; a/k/a Sandoz AG: *See—*
Bourquin, Jean-Pierre; Schwarb, Gustav; and Waldvogel, Erwin, 3,853,915.

Sandoz-Wander, Inc.: *See—*
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Simpson, William R., 3,853,877.
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Sankpill, Lester Alan: *See—*
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Sankyo Company Limited: *See—*
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Santilli, Arthur A.; and Scotese, Anthony C., to American Home Products Corporation. 1,7-Dialkyl-1,2-dihydro-4-hydroxy-1,8-naphthyridine-3-carboxylic acid alkyl esters. 3,853,864, Cl. 260-295.50b.

Sapkus, Jurgis; Lewis, J. Lewis; Piurkowsky, Stephen W.; and Cleveland, Dale P., to Mattel, Inc. Manually-manipulated animated figure toy. 3,852,911, Cl. 46-126.000.

S.A.R.L. Etud: *See—*
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Saroy Engineering: *See—*
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Sasaki, Youichi; and Tomita, Hisao, to Tokyo Shibaura Electric Company Ltd. Nuclear reactor core assembly. 3,853,701, Cl. 176-50.000.

Sato, Masaaki: *See—*

Takahashi, Nobuaki; Sato, Masaaki; Iwasaki, Yoshiki; and Nisikawa, Kazunori, 3,854,098.

Sato, Munefumi, to Nissan Motor Company, Limited. Rotor and apex seal arrangement for a lobed rotor and housing. 3,853,438, Cl. 418-113.000.

Sauthier, Pierre, to Societe Suisse Pour Industrie Horlogere Management Services S.A. Electronic correction. 3,852,951, Cl. 58-23.00r.

Sawabe, Eiichi: *See—*
Yoshino, Takehiko; Yamane, Hisakichi; Sawabe, Eiichi; Yanagimachi, Akio; Fukuda, Masaaki; Kayano, Tatsuo; Masuda, Michio; Takezawa, Teruhiro; Mohri, Katsuo; and Nabeyama, Hiroaki, 3,854,010.

Sayler, Robert N. Plural cycle display device. 3,852,949, Cl. 58-2.000.

Scalzo, Augustine J.; and McLaurin, Leroy, to Westinghouse Electric Corporation. Turbine rotor blade cooling and sealing system. 3,853,425, Cl. 416-95.000.

Scanlon, Patricia M.: *See—*
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Schacht, Louis L. Window assembly. 3,852,915, Cl. 49-143.000.

Schafer, Josef, to Telesco Brophey Limited. Umbrella frame. 3,853,135, Cl. 135-25.00r.

Schaible, Robert M.: *See—*
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Scharman & Co.: *See—*
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Scheer, Marcel: *See—*
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Schefczik, Ernst. Arylmercaptonaphtholactams. 3,853,911, Cl. 260-326.50s.

Schendel, Robert E., to Measurand Systems, mesne. Interface measuring method and apparatus. 3,853,005, Cl. 73-290.00r.

Schering AG: *See—*
Blass, Eckhart; Koch, Kurt-Henning; Cornelius, Wolf; and Gross, Bodo, 3,853,986.
Cornelius, Wolf; Gross, Bodo; Meiners, Jochen; Blass, Eckhart; and Koch, Kurt-Henning, 3,853,929.

Scherring AG: *See—*
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Schier, Gustave. Apparatus for peeling fruit such as a lemon and slicing the rind. 3,853,050, Cl. 99-590.000.

Schiffmann, Robert F.: *See—*
Kaufman, Harold B., Jr.; McCarthy, John P.; and Schiffmann, Robert F., 3,854,024.

Schilling, Hartmut: *See—*
Labossier, William H.; and Schilling, Hartmut, 3,853,582.

Schindler, Herbert; and Loffler, Tilo, to American Shoe Machinery Corporation. Shoe support for welt lasting machine. 3,852,841, Cl. 12-142.00r.

Schindler, Oswald, to Intermarket Corporation. Surgical gloves. 3,852,826, Cl. 2-168.000.

Schlatter, H. A., A.G.: *See—*
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Schlatter, James M.: *See—*
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Schlatter, Rene; and Stroup, James P., to Latrobe Steel Company. Desulfurization of vacuum-induction-furnace-melted alloys. 3,853,540, Cl. 75-53.000.

Schliep, Hans-Jochen: *See—*
Jonas, Rochus; Unger, Richard; Schliep, Hans-Jochen; and Schorscher, Ernst, 3,853,878.

Schmerling, Louis, to Universal Oil Products Company. Alkylation of ethers. 3,853,916, Cl. 260-340.600.

Schmerling, Louis, to Universal Oil Products Company. Reaction of phenols with olefins and cupric halide. 3,853,956, Cl. 260-473.00s.

Schmidt, Louis A. Fuze and sonde coaxial connector. 3,853,061, Cl. 102-70.20r.

Schneider, Friedrich, to G. Rau. Temperature responsive valves. 3,853,268, Cl. 236-48.00r.

Schocher, Arno Johannes: *See—*
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Scholl, Inc.: *See—*
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Scholze, Dietrich: *See—*
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Scholze, Gottfried; Scholze, Dietrich; and Maier, Johannes. Warp beam section for a loom. 3,853,287, Cl. 242-118.500.

Schonegg, Louis E., to Regency Electronics, Inc. Transceiver channel selector. 3,854,093, Cl. 325-18.000.

Schorscher, Ernst: *See—*
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Schroeder, Rondon L.: *See—*
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Schulte, Rudolf R., to Heyer-Schulte Corporation. Artery-to-vein shunt. 3,853,126, Cl. 128-214.00r.

Schultz, Gerhard L. Loader/unloader conveyor system. 3,853,230, Cl. 214-89.000.

Schundehutte, Karl-Heinz; and Trautner, Kersten, to Bayer Aktiengesellschaft. Reactive dyestuffs containing a fiber-reactive alkylsulphonylpyrimidyl group. 3,853,840, Cl. 260-146.000.

Schwandt, Wolfgang: *See—*
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Schwarb, Gustav: *See—*
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Schwartz, Albert B., to Mobil Oil Corporation. Removal of organic cations from crystalline aluminosilicates. 3,853,743, Cl. 208-111.000.

Schwartz, Bernard: *See—*
Ahn, Junghi; Schwartz, Bernard; and Wilcox, David L., 3,852,877.

Schwartz, Erich: *See—*
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Schwartzenberg, Julius M., to Storm Hero Umbrella Co., Inc. Self-centering foldable umbrella structure. 3,853,136, Cl. 135-25.00r.

Schwarzinger, Ernst: *See—*
Obendorf, Werner; Lindner, Irmgard; Krieger, Josef; and Schwarzinger, Ernst, 3,853,866.

Schweitzer, Peter B.: *See—*
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Schwenninger, Ronald L., to PPG Industries, Inc. Bubbler for a glass melting furnace. 3,853,524, Cl. 65-178.000.

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Stewart, John D.; and Hesler, Milton E., to Dow Chemical Company, The. Method of filling subterranean voids with a particulate material. 3,852,967, Cl. 61-35.000.

Stima, Joseph Frank: *See*—
Mostow, John Hinckley; and Stima, Joseph Frank, 3,853,780.

Stine, Clifford R., to Moore, Samuel, & Company. Composite tubing. 3,853,149, Cl. 138-111.000.

Stobb, Anton R., to Stobb, Inc. Sheet stack handling apparatus. 3,853,234, Cl. 214-300.000.

Stobb, Inc.: *See*—
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Stokland, Sigmund. Combine harvesters. 3,853,131, Cl. 130-27.00f.

Stommel, Manfred: *See*—
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Stoodley, Richard John, to Beecham Group Limited. Penicillanic acid derivatives. 3,853,848, Cl. 260-239.100.

Storm Hero Umbrella Co., Inc.: *See*—
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Stove, Edward Raymond: *See*—
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Strauch, Berish; Bloomberg, Allan E.; and Freed, Selwyn Z. Method and device for achieving a penile erection. 3,853,122, Cl. 128-79.000.

Stribling, John Brian, to Lucas Furnace Developments Limited. Furnaces. 3,853,076, Cl. 110-7.00r.

Stringer, Carl W.: *See*—
Gassmann, Hans-Ulrich; Chen, Ching-Muh; Vermot, Michel; and Stringer, Carl W., 3,853,500.

Stringer, Carl W., to Radon Development Corporation. Removal of radioactive radon daughters from air. 3,853,501, Cl. 55-37.000.

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Hardtl, Karl Heinz; Knufer, Heinrich; and Stuijts, Andreas Leopoldus, 3,853,973.

Stull, Keefer S., Jr., to United States of America, Navy, mesne. Circuit for fast recovery from jamming in a radar receiver system with large dynamic range. 3,854,136, Cl. 343-18.00e.

Sturni, Lance C.: *See*—
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Sudar, Seymour; and Poucher, Frederick W., Jr., to Rockwell International Corporation. Compact muffler scrubber. 3,853,484, Cl. 23-288.00f.

Sudo, Michio, 50% interest to Mitsubishi Yuka Kabushiki Kaisha. Method of producing plastic bags. 3,853,661, Cl. 156-244.000.

Suen, Tzeng Jiueq: *See*—
McGarry, Frederick Jerome; and Suen, Tzeng Jiueq, 3,853,690.

Sugisaki, Takao: *See*—
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Sugiyama, Tohoru: *See*—
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Suhami, Avraham; and Sabbah, Benjamin, to Elscint Ltd. Detector having a plurality of pairs of photos-detectors for determining the coordinates of a light event in a scintillator crystal. 3,854,047, Cl. 250-366.000.

Sukenik, Robert J., to New Hudson Corporation. Roll and method of manufacture. 3,852,862, Cl. 29-132.000.

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Sury, Yel S.; and Grace, Henry C., Jr., to Ciba-Geigy Corporation. Process for the manufacture of cyclopropanecarbonitrile. 3,853,942, Cl. 260-464.000.

Sutar, William: *See*—
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Sutherland, William. Automatic water sampler. 3,853,009, Cl. 73-423.00r.

Sutliff, Wayne N.; and Downen, Jim L. Duplex hydraulic-mechanical jar tool. 3,853,187, Cl. 175-297.000.

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Svec, Joseph J. Disc type indicia recording and display device. 3,852,900, Cl. 40-70.00r.

Swanson, Bernard H., to Super Pigeon Corporation. Reusable target pigeon. 3,853,319, Cl. 273-105.400.

Sybron Corporation: *See*—
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Szabo, Katalin, nee Mogyorosi; Banhidy, Janos; Lazar, Ferenc; and Ormossy, Miklos, to Tatabanyai Szenbanyak. Process for the comminution of particulate aliuminaceous materials. 3,853,535, Cl. 75-1.000.

Szmuszkovicz, Jacob, to Upjohn Company, The. Debenzo[b,f]-s-triazolo[4,3-d][1,4] thiazepines-3-ones and dioxo derivatives thereof. 3,853,881, Cl. 260-268.0pc.

Szmuszkovicz, Jacob, to Upjohn Company, The. 2,9-Dihydro-[c,f]-s-triazolo[4,3-a] azepin-3-ones. 3,853,882, Cl. 260-268.0pc.

Szmuszkovicz, Jacob, to Upjohn Company, The. Dibenzo-[b,f]-s-triazolo-[4,3-d][1,4] oxazepin-3-(2H)-ones. 3,853,904, Cl. 260-308.00c.

Tabler, Donald C., to Phillips Petroleum Company. Hydrogenation of cyclopentadiene. 3,853,748, Cl. 208-255.000.

Tacke, Michael: *See*—
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Tagawa, Susumu, to Sony Corporation. Method of making an electrical contact for a color pickup tube. 3,854,069, Cl. 313-318.000.

Taguchi, Satoru: *See*—
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Takahashi, Nobuaki; Sato, Masaaki; Iwasaki, Yoshiki; and Nisikawa, Kazunori, to Victor Company of Japan, Ltd. Multichannel disc demodulation circuit. 3,854,098, Cl. 329-103.000.

Takaku, Sakae: *See—*
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Takida, Masami; Suzuki, Isao; Osuga, Masahisa; and Ota, Takeshi, to Toyoda Koki Kabushiki Kaisha. Machine tool having rest apparatus. 3,852,920, Cl. 51-105.00r.
Talonn, Daniel A.; and Cooley, Denton A., to Sherwood Medical Industries, Inc. Blood oxygenating device with heat exchanger. 3,853,479, Cl. 23-258.500.
Tanaka, Kojiro: *See—*
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Tanimura, Takenori; and Ito, Yoichiro, to United States of America, Health, Education and Welfare. Droplet counter current chromatography. 3,853,765, Cl. 210-198.00c.
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Taranto, Rosanna. Method for consolidating impermeable soils and pile provided thereby as fitted with spaces apart enlargements. 3,852,966, Cl. 61-35.000.
Tartault, Jean; and Minot, Alain, to Luchaire S.A. Improvements in or relating to rockets. 3,853,058, Cl. 102-49.300.
Tarui, Yasuo; Sekigawa, Toshihiro; and Hayashi, Yutaka, to Kogyo Gijutsuin; a/k/a Industrial Science and Technology, Ministry of International Trade and Industry, Agency of. Transistor for super-high frequency and method of manufacturing it. 3,853,644, Cl.148-175.000.
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Task Corporation: *See—*
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Tatsuta, Sumitaka; Ueno, Wataru; Minagawa, Nobuhiko; and Kurabayashi, Hiroyuki, to Fuji Photo Film Co., Ltd. Process for the preparation of photographic materials. 3,853,584, Cl. 117-34.000.
Tatsuta, Sumitaka; and Ueno, Wataru, to Fuji Photo Film Co., Ltd. Process for the production of photographic materials. 3,853,585, Cl. 117-34.000.
Taylor, Alfred Bartley: *See—*
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Tenmyo, Glennsuke; and Yamada, Kozo, to Nippon Kokan Kabushiki Kaisha. Method for manufacturing cold rolled steel excellent in press-formability. 3,853,636, Cl. 148-12.100.
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Terenzoni, Amerigo. Planar wooden body adapted to shrink about its circumference. 3,853,679, Cl. 161-56.000.
Tesoro, Giuliana C.; and Orozlan, Andrew, to Stevens, J. P., & Co., Inc. Inner salts of alkyl alkoxyalkyl hydroxyalkyl sulfonium sulfates. 3,853,940, Cl. 260-458.000.
Tewes, Jochen, to Berstorff, Hermann, Maschinenbau GmbH. Bending compensated roll for a calender. 3,852,860, Cl. 29-110.000.
Texaco Inc.: *See—*
Canup, Robert E., 3,853,106.
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Miller, Kenneth D.; and Parker, Levi C., 3,853,497.
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Thomas, Carson. Device for latching or locking two objects together. 3,852,853, Cl. 24-230.00a.
Thomas de la Rue International Limited: *See—*
Edwards, Christopher John, 3,853,675.
Thomas, Harold K. Process for producing elemental copper by reacting molten cuprous chloride with zinc. 3,853,543, Cl. 75-72.000.
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Thruston, David L., to Abex Corporation. Controlled opening pressure compensated flow control valve. 3,853,139, Cl. 137-117.000.
Thummler, Fritz; and Ahmed, Mahmoud. Sintering alloy. 3,853,537, Cl. 75-.50r.
Thurston, Elvin Frederick William; and Scott, John Gabriel Valentine, to Ilford Limited. Silver halide photographic supersensitizing dye combination. 3,853,565, Cl. 96-124.000.
Tieszen, Dale O., to Phillips Petroleum Company. Poly(arylene sulfide) polymers. 3,853,824, Cl. 260-79.000.
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Towler, James F., to Regency Electronics, Inc. Crystal controlled frequency modulated transmitter. 3,854,094, Cl. 325-146.000.
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Tresselt, Carl P., to Bendix Corporation, The. Depressed-puck microstrip circulator. 3,854,106, Cl. 333-1.100.
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Triodina, Nina Sergeevna: *See—*
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Tucker, Carl L.; Schaible, Robert M.; and Cooper, Frank B., to Pak-Well Corporation. Quick opening envelope. 3,853,262, Cl. 229-80.000.
Tucker, Robert Jerome, to American Cyanamid Company. Vanadyl phthalocyanine sulfonamides and laser protective plastic filters containing the same. 3,853,783, Cl. 252-300.000.
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Tyler, Kenneth R., to Signode Corporation. Strap positioning apparatus. 3,853,051, Cl. 100-27.000.
Tylko, Jozef Kazimierz, to British Titan Limited. Process for the production of iron-containing titaniferous particles. 3,853,536, Cl. 75-3.000.
Tymoszczuk, Jerzy. Process apparatus for treating water by a combined activated sludge and biological filter bed. 3,853,752, Cl. 210-17.000.
Tyner, David A., to Searle, G. D., & Co. 17 b-hydroxy-16,16-dimethylester-4-en-3-one. 3,853,926, Cl. 260-397.400.
Uchiyama, Hatsuo, to Maruishi Iron Works Co. Ltd. Vertical type paper machine. 3,853,696, Cl. 162-315.000.
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Urani, Angelo, to McGraw-Edison Company. Protector for electric circuits. 3,854,111, Cl. 337-165.000.

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Uttrachi, Gerald D.; and Christian, Daniel, to Union Carbide Corporation. High speed vertical electro-slag welding. 3,854,028, Cl. 219-126.000.

Vachon, Raymond N., to Eastman Kodak Company. Blends of linear water-dissipatable polyesters and aliphatic or cycloaliphatic dicarboxylic acids. 3,853,820, Cl. 260-75.00t.

Vainshtein, Boris Iosifovich; Zimin, Alexandr Vasilievich; Chernyshov, Evgeny Andreevich; Kurek, Margarita Evgenievna; Polivanov, Alexandr Nikolaevich; Bogovtseva, Ljudmila Petrovna; Starodubtsev, Eduard Sergeevich; Masljukov, Anatoly Ivanovich; Andreev, Vadimir Ivanovich; Ezerets, Miron Aronovich; and Zorov, Boris Ivanovich. Method of producing organochlorosilanes. 3,853,726, Cl. 204-158.0he.

Vale, Raymond J. Brass musical iustrument practice device. 3,853,034, Cl. 84-465.000.

van Bruggen, Geert: *See—*
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van de Houten, Richard S.: *See—*
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van den Ouweland, Godefridus Antonius Maria, to Lever Brothers. Diketones and their use. 3,853,918, Cl. 260-347.200.

Van Der Horst, Eberhard, to Monforts, A. Index pin for bracing and orienting the tool turret of machine tools. 3,852,858, Cl. 29-48.50a.

van der Merwe, Izak Francois. Oil pressure detector. 3,853,110, Cl. 123-198.0db.

van Dijk, Jan; and Zwagemakers, Johannes Ma·ia Antonius, to U.S. Philips Corporation. Basic substituted-alkylidenamino-oxy alkyl-carboxylic-acid esters. 3,853,955, Cl. 260-472.000.

Van Donk, Cornelis; and Vermeulen, Geert Jan, to Ruti-Te Strake B.V. Weaving machine. 3,853,151, Cl. 139-122.000.

Van Duynhoven, Adrianus Henricus; and Kaalverink, Gerardus Hendrikus, to Ruti-Te Strake B.V. Device for intermittently supplying measured weft yarn lengths to the weft inserting device of a shuttleless weaving machine. 3,853,153, Cl. 139-127.000.

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Vanderheiden, Greg C.; Lamers, David F.; Geisler, Chris Daniel; and Volk, Andrew M. Auto-monitoring communication devices for handicapped persons. 3,854,131, Cl. 340-365.001.

Varian Associates: *See—*
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Velten & Pulver, Inc.: *See—*
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Verbeek, Wolfgang, to Bayer Aktiengesellschaft. Production of shaped articles of homogeneous mixtures of silicon carbide and nitride. 3,853,567, Cl. 106-44.000.

Veres, Sandor A.: *See—*
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Verleur, Hans Willem, to Bell Telephone Laboratories Incorporated. Epitaxial growth of group III-V semiconductors from solution. 3,853,643, Cl. 148-171.000.

Vermeulen, Geert Jan: *See—*
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Verrina S.p.A.: *See—*
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Vesci, Anthony, to International Business Machines Corporation. Two-speed drive system for print mechanism or the like. 3,853,024, Cl. 74-812.000.

Vickers, Zed: *See—*
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Victor Company of Japan, Ltd.: *See—*
Takahashi, Nobuaki; Sato, Masaaki; Iwasaki, Yoshiki; and Nisikawa, Kazunori, 3,854,098.

Viebcke, Herbert. Blocks with detachable cap plates having additional mating connecting means. 3,852,909, Cl. 46-26.000.

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Vinarcsik, Joseph E.; and Jachim, John A., to Hi-Hard Rolls, Inc. Conveyor roller structure. 3,853,214, Cl. 198-127.00r.

Vinokurov, Vasily Ivanovich: *See—*
Kestner, Olga Evgenievna; Vinokurov, Vasily Ivanovich; Axenova, Irina Petrovna; Ozemblovskaya, Galina Tadeushevna; Shakhpenderian, Amayak Pogosovich; Shagurin, Anatoly Zlexeevich; Popova, Larisa Nikolaevna; Zverev, Ivan Ivanovich; Kokonin, Sergei Sergeevic; Matveev, Anatoly Alexandrovich; Petrunin, Alexandr Mikhailovich; Sherstnev, Ebgeny Sergeevich; Akimtsev, Anatoly Alexeevich; Oblasti, Balashikha Moskovskoi; and Sklyarov, Nikolai Mitrofanovich, 3,853,493.

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Vittoz, Eric Andre; and Fonjallaz, Claude, to Centre Electronique Horloger S.A. Electronic watch. 3,852,952, Cl. 58-23.00r.

Vlasenko, Natalya Andreevna; Zynio, Stepan Andreevich; and Pukhly, Zhanetta Alexandrovna. Electroluminescent device with variable emission. 3,854,070, Cl. 313-503.000.

Vlasov, Vasily Platonovich: *See—*

Distler, Grigory Isaakovich; Lobachev, Anatoly Nikolaevich; Vlasov, Vasily Platonovich; Melnikov, Oleg Konstantinovich; and Triodina, Nina Sergeevna, 3,853,596.

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Volsy, Robert, to Commissariat a l'Energie Atomique. Method and device for the collection of particles in a gas with particle-size separation. 3,853,750, Cl. 209-127.00r.

Von Strandtmann, Maximilian: *See—*
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Vosolsobe, Jan; Dohnalek, Rudolf; Kadlec, Bohumil; Michalek, Jiri; Simecek, Antonin; Cap, Miroslav; and Novak, Miroslav, to Trust Ceskoslovenskeho prumyslu dusikarenskeho Praha. Catalysts for the oxidation of ammonia to nitrogen oxide. 3,853,790, Cl. 252-44.000.

Voss, Francis D. Jack support extender. 3,853,302, Cl. 254-133.00r.

Vukovich, William J.: *See—*
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Wada, Masahiro: *See—*
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Wade, Larry P.: *See—*
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Wahl, Eugene A. Vibratory bin activator. 3,853,247, Cl. 222-199.000.

Wahl, Josef; and Wessel, Wolf, to Bosch, Robert, G.m.b.H. Ignition timing control system for internal combustion engine ignition systems. 3,853,103, Cl. 123-117.00r.

Wahl, Richard: *See—*
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Wakuda, Hiroshi: *See—*
Harada, Toshio; Akayama, Jinichi; Yokozeki, Masanori; Ishimura, Toshihiro; Nagano, Shinji; Wakuda, Hiroshi; Shimomura, Kazuhiko; and Matsunami, Akira, 3,852,989.

Waldvogel, Erwin: *See—*
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Wall, Leo A.; deceased (by Wall, Leola Grace; administratrix); Brown, Daniel W.; and Florin, Roland E., to United States of America, Army. Process for crosslinking fluorocarbon polymers. 3,853,828, Cl. 260-87.50a.

Wall, Leola Grace: *See—*
Wall, Leo A.; Brown, Daniel W.; and Florin, Roland E., 3,853,828.

Walser, Armin: *See—*
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Walsh, Robert J., to Plough, Inc. Method of storing and retrieving information. 3,853,399, Cl. 355-64.000.

Walter, Robert R.: *See—*
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Walters, Buford T.: *See—*
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Ward, John W., to Union Oil Company of California. Selective midbarrel hydrocracking. 3,853,742, Cl. 208-111.000.

Wardlaw, Russel, to Cookson Company, The. Rolling door operating mechanism. 3,853,167, Cl. 160-133.000.

Wardly, Goerge A.: *See—*
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Warner-Lambert Company: *See—*
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Klutchko, Sylvester; and Von Strandtmann, Maximilian, 3,853,921.

Warthen, John Lawrence; Briggs, Warren Stanley; and Ciapetta, Frank George; deceased (by Ciapetta, Carolina; executrix). Preparation of microporous alumina extrudates. 3,853,789, Cl. 252-463.000.

Warwick, Edward H., to General Motors Corporation. Master cylinder partial system displacement modifier. 3,852,962, Cl. 60-561.000.

Wasel-Nielen, Horst-Dieter: *See—*
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Watanabe, Hirokazu, to Yoshida Kogyo Kabushiki Kaisha. Pull tab for cam lock sliders. 3,852,852, Cl. 24-205.14a.

Watanabe, Teruji; Fukui, Takasuke; Higurashi, Minoru; Sugisaki, Takao; and Ochiai, Tatsushiro, to Kokusai Denshin Denwa Co., Ltd. and . Non-linear flux detection device utilizing magnetic thin film. 3,854,086, Cl. 324-43.00r.

Watanabe, Tuneyasu: *See—*
Nishi, Tadashi; Watanabe, Tuneyasu; Shimada, Haruo; Fujimoto, Takeshi; Miida, Kazuhiro; and Okazaki, Takashi, 3,853,544.

Waters, John R.; and Zwarun, Andrew A. Process for detection of biological activity. 3,854,041, Cl. 250-303.000.

Watkins, Willis T.; and Sankpill, Lester Alan, to Parmelee Industries, Inc. Hard hat crown support band attachment. 3,852,822, Cl. 2-3.00b.

Watson, Sidney Y.; and Spector, George. Time memorandum. 3,853,090, Cl. 116-133.000.

Wayne-Gossard Corporation: *See—*
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Wean United, Inc.: *See—*
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Webasto-Werk W. Baier KG: *See—*
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Webb, Clay M. Fish hook embedding device. 3,852,905, Cl. 43-15.000.

Weber, Hendrik Gustaaf Otto, to Hoogovens Ijmuiden BV. Conduit system for the transport of hot gases, especially hot-blast air for a blast furnace, which conduit system includes a connector plug. 3,853,307, Cl. 266-30.000.

Webster, Owen Wright, to Du Pont de Nemours, E. I., and Company. Cyclopentadienes in which at least four of the ring carbons carry cyano substituents and methods for their preparation. 3,853,943, Cl. 260-464.000.

Weddleton, Richard Francis, to General Electric Company. Tin containing esterimide polymer resins and method of forming. 3,853,817, Cl. 260-75.00n.

Wedemeyer, Karlfried: *See—*
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Weeding, Gale S., to United States of America, Navy. Twisted prism explosive device. 3,853,060, Cl. 102-67.000.

Wehrmeister, Herbert L., to Commercial Solvents Corporation. Imidazoline tranquilizing agents. 3,853,995, Cl. 424-273.000.

Wei, Peter H. L.; and Bell, Stanley C., to American Home Products Corporation. 2,3,4,5-Substituted thiazoles. 3,853,872, Cl. 260-251.00a.

Weigele, Gebhard; and Sulzberger, Johann. Stationary washing device for motor vehicles passing therethrough. 3,852,842, Cl. 15-21.00d.

Weigele, Manfred: *See—*
Leimgruber, Willy; and Weigele, Manfred, 3,853,946.

Weiner, Karl Ingvar: *See—*
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Weinshenker, Ned M.; and Andersen, Niels H., to Alza Corporation. Novel 5',6'-dihydro-2H-pyran-4'-yl prostaglandin ethers. 3,853,854, Cl. 260-240.00r.

Weinstein, Benjamin: *See—*
Rein, Burton Maxwell; and Weinstein, Benjamin, 3,853,532.

Weir, Casper J., Jr.; and Keyes, Fred. Pouring spout for cans. 3,853,249, Cl. 222-570.000.

Weir, Niall Galbraith, to Glaxo Laboratories Limited. 3-Phosphoranylidene ethyl cephalosporins. 3,853,860, Cl. 260-243.00c.

Weirich, Walter; Schwandt, Wolfgang; and Heyer, Willy, to Gewerkschaft Eisenhutte Westfalia. Dust suppression spray valve control to longwall mining. 3,853,354, Cl. 299-43.000.

Weisgerber, Thomas W., to General Motors Corporation. Secondary air injection apparatus. 3,852,959, Cl. 60-290.000.

Weiss, Francis; and Rusch, Raymond, to Kuhlmann, Ugine. Process of preparing alpha-substituted acrylic compounds. 3,853,945, Cl. 260-465.400.

Weiss, Martin Joseph: *See—*
Bernady, Karel Francis; Floyd, Middleton Brawner, Jr.; Poletto, John Frank; Schaub, Robert Eugene; and Weiss, Martin Joseph, 3,853,951.

Weitz, Hans-Martin: *See—*
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Welgas, John. Trestle template for power tools. 3,853,161, Cl. 144-144.500.

Wellborne, John Peter: *See—*
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Welty, Albert B., Jr., to Exxon Research and Engineering Company. Low temperature-low pressure naphtha reforming process. 3,853,745, Cl. 208-139.000.

Wentworth, William P., to Beloit Corporation. Tensioning device. 3,853,282, Cl. 242-75.440.

Werbel, Leslie M.: *See—*
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Werner, Frank D.: *See—*
Werner, Frank D.; and Bloomfield, Roger D. (said Bloomfield assor. to said), 3,853,546.

Werner, Frank D.; and Bloomfield, Roger D., said Bloomfield assor. to said Werner, Frank D. Force gage. 3,853,546, Cl. 73-141.00r.

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Werner, R. D., Co., Inc.: *See—*
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Werner, Richard Lawrence; Montgomery, Richard Malvern; and Ridge, Martin Peter, to Werner, R. D., Co., Inc. Independent toeboard construction. 3,853,203, Cl. 182-113.000.

Werstlein, Peter F. Welding tip for plastic welding gun. 3,853,669, Cl. 156-497.000.

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Western Electric Company, Incorporated: *See—*
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Scalzo, Augustine J.; and McLaurin, Leroy, 3,853,425.
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Westlake, John Henry; Snyder, John Wallace; Leach, Clifford Harvey; and Cebuliak, Steve Edward, to Eastman Oil Well Survey Company. Methods and systems for measuring, displaying and recording time-rate of penetration. 3,853,004, Cl. 73-151.500.

Weston Instruments, Inc.: *See—*
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Westport Development & Manufacturing Company, Inc.: *See—*
DeKoeyer, Robert E.; and Mikita, Marion T., 3,853,390.

Wheeler, Alton D. Portable sign construction. 3,852,902, Cl. 40-129.00r.

Whelan, James M., to University of Southern California. Flowmeter. 3,853,144, Cl. 137-608.000.

Whitaker, Willard H. Bathtub hoist and transfer device. 3,852,835, Cl. 4-185.001.

White, Jack D., Jr.; and Miranti, Joseph P., Jr., to Dayco Corporation. Endless power transmission belt. 3,853,017, Cl. 74-234.000.

White, Melvin J., Jr.: *See—*
Carroll, A. Lindsay, Jr.; and White, Melvin J., Jr., 3,854,145.

White, Rudolph C.: *See—*
Klock, Byron V.; and White, Rudolph C., 3,853,760.

White, Warren D., to United States of America, Navy. Low angle radar tracking system. 3,854,135, Cl. 343-16.00m.

Whitley, Ernest M.; Beaman, Don L.; and McCombie, William S. Data recording camera. 3,854,142, Cl. 354-173.000.

Whitty, Albert J. Small animal feeder. 3,853,096, Cl. 119-18.000.

Whitty, Albert J., to Sinai Hospital of Detroit. Apparatus for inserting a syringe needle into a vial. 3,853,158, Cl. 141-27.000.

Widdig, Arno; Kuhle, Engelbert; Grewe, Ferdinand; and Kaspers, Helmut, to Bayer Aktiengesellschaft. 1-Amino-sulfonyl-2-aminobenzimidazoles. 3,853,908, Cl. 260-309.200.

Widmer, Colin Frederick. Components using cast-in cooling tubes. 3,853,309, Cl. 266-41.000.

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Widmer, Robert: *See—*
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Wiedenmann, Walter, to Eheim, Gunther. Motor pump combination. 3,853,429, Cl. 417-356.000.

Wilcox, David L.: *See—*
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Wilhoit, Darrel L.: *See—*
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Wilkerson, Kenneth Rex, to National Can Corporation. Tomato skin removing device. 3,853,049, Cl. 99-584.000.

Willersinn, Herbert; Gausepohl, Hermann; Naarmann, Herbert; and Hellwig, Karl-Ruediger, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Etherification of compounds bearing alcoholic hydroxyl groups. 3,853,461, Cl. 8-189.000.

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Williams, Edward G.: *See—*
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Williams, Heyward Sturges; and Robbins, Robert, to LRC Corporation. High speed impedance sensitive switch driver. 3,854,057, Cl. 307-255.000.

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Williams, Laurence Lyman; and Coscia, Anthony Thomas, to American Cyanamid Company. Water-soluble thermosetting glyoxalated carbamoylalkyl alkyleneamino polymers and paper having a content thereof. 3,853,816, Cl. 260-72.00r.

Williams, Ralph P., to Phillips Petroleum Company. Lubricants. 3,853,775, Cl. 252-42.100.

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Wilpers, Dale J., to Shell Oil Company. Quenching oil composition. 3,853,638, Cl. 148-29.000.

Wilson, Edward McKenzie; and Taylor, Alfred Bartley. Crystalline complex of penicillin G 1(S) - oxide and process for preparing same. 3,853,850, Cl. 260-239.100.

Wilson, Ian Mayor; and Hamp, Eric William, to Arcall Limited. Method of and a machine for forming and filling trays with articles. 3,852,936, Cl. 53-26.000.

Wilson, William W., to Rockwell International Corporation. Coupling. 3,853,338, Cl. 285-86.000.

Wilson, William W., to Rockwell International Corporation. Coupling. 3,853,339, Cl. 285-157.000.

Wilting, Hermanus Josephus Henricus, to U.S. Philips Corporation. Method of manufacturing an article and article manufactured by means of the method. 3,853,613, Cl. 117-212.000.

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Winter, Karl, to GEAG Concordia Elektrizitats-Aktiengesellschaft. Method of purifying gases containing combustible gaseous or vaporous impurities. 3,853,985, Cl. 423-210.000.

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Witzel, Bruce E.; Shen, Tsung-Ying; Graham, Patricia M.; Clark, Robert L.; and Pessolano, Arsenio A., to Merck & Co., Inc. Certain 1-substituted-3-amino-1(2H)pyridones. 3,853,897, Cl. 260-296.00r.

Wodrich, Geotz Werner; Heckh, Gerhard; and Zerweckh, Manfred, to Siemens Aktiengesellschaft. Slot nozzle for isotope separation of gaseous compounds. 3,853,528, Cl. 55-434.000.

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Wojcik, Charles William; and Wojcik, Bruce Charles, 25% to Goold, Reed, 25% to Wojcik, Charles W., 25% to Cooper, Gerald D. and 25% to Herrett, Wilfred H. Process for electrowinning of copper values from solid particles in a sulfuric acid electrolyte. 3,85,724, Cl. 204-108.000.

Wolcke, Uwe: *See—*
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Wood, Charles M. Bellows fold end closure. 3,853,260, Cl. 229-37.00r.

Wood, Guy B., to Weston Instruments, Inc. Scanning head for inspecting material having parallel strands. 3,854,046, Cl. 250-358.000.

Woodle, John C.; and Smith, Dennis J., to Arlington Aluminum Company. Display stand. 3,852,901, Cl. 40-125.00h.

Woodring, Horace Leo. Retractable cable device. 3,853,285, Cl. 242-107.110.

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Wrono, Walter A. Slatted shade assembly having storm bar means. 3,853,166, Cl. 160-133.000.

Wrono, Walter A. Roll-up shade construction and method of erecting same. 3,853,168, Cl. 160-133.000.

Wrzesinski, Joseph Francis, to Grace, W. R., & Company. Sprayable photocurable surface coating composition. 3,853,727, Cl. 204-159.180.

Wrzesinski, Joseph Francis, to Grace, W. R., & Company. Photocurable polishing wax containing a polyene-polythiol resin. 3,853,728, Cl. 204-159.180.

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Wurr, Jurgen; and Vering, Antonius, to Polysius AG. Rotary drum for the heat treatment of strongly erosive material. 3,853,458, Cl. 432-118.000.

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Yamamoto, Yoshio, to Research Engineering & Manufacturing, Inc., mesne. Thread-forming apparatus. 3,852,992, Cl. 72-469.000.

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Yazawa, Masahide; and Inoue, Kimio, to Polymer Processing Research Institute Ltd. and Kobe Steel Co., Ltd. Method for laminating uniaxially stretched thin layers of film as warps and wefts. 3,853,662, Cl. 156-265.000.

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Yevick, George J., to Personal Communications, Inc. Micro optic storage and retrieval system. 3,853,395, Cl. 353-27.000.

Yoda, Kazuhiro; and Tanaka, Kojiro, to Kabushiki Kaisha Daini Seikosha. Electronic timepiece. 3,852,950, Cl. 58-4.00a.

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Young, Dean Arthur, to Union Oil Company of California. Hydrocracking process. 3,853,747, Cl. 208-111.000.

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Zimmer, Peter. Apparatus for printing and/or dyeing of high pile webs. 3,852,980, Cl. 68-5.00d.

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Zundel, Arthur P., to National Can Corporation. Container end and forming method. 3,853,080, Cl. 113-121.00c.

Zundel, Arthur P., to National Can Corporation. Easy open end. 3,853,242, Cl. 220-267.000.

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Autrand, Hubert M. W. Re. 28,268.

Alpern, Melvin. Cover for decanter or like liquid dispensing container. Re. 28,272, 12–10–74, Cl. 222—556.

Autrand, Hubert M. W., to Aktiebolaget Electrolux. Device for signaling need for cleaning or replacing suction cleaner dust bag. Re. 28,268, 12–10–74, Cl. 116—67.

Beloit Corp.: *See*—
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Delatronchette, Claude, to Elf-Union S.A. Supply systems for a burner of light hydrocarbon-water emulsions. Re. 28,266, 12–10–74, Cl. 431—190.

Elf-Union S.A.: *See*—
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Hergert, Richard E.: *See*—
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Hill, Lester M., J. D. Parker, deceased, by D. C. Parker, and R. E. Hergert, to Beloit Corp. Papermaking machine headbox having trailing elements in the slice chamber extending in the stock flow direction. Re. 28,269, 12–10–74, Cl. 162—343.

Honebrink, Roger W.: *See*—
Chen, Di, Honebrink, Otto, and Sartell. Re. 28,270.

Honeywell Inc.: *See*—
Chen, Di, Honebrink, Otto, and Sartell. Re. 28,270.

International Business Machines Corp.: *See*—
Irwin, John W. Re. 28,265.

Irwin, John W., to International Business Machines Corp. Intrarecord resynchronization in digital-recording systems. Re. 28,265, 12–10–74, Cl. 360—50.

Lehman, Charles L., to Lehman Equipment Co. Cultivator. Re. 28,271, 12–10–74, Cl. 172—587.

Lehman Equipment Co.: *See*—
Lehman, Charles L. Re. 28,271.

Otto, Gary N.: *See*—
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Parker, Dorothy C.: *See*—
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Parker, Joseph D.: *See*—
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Rackus, John J., J. P. Skilbeck, and A. H. Szkudlapski, to Western Electric Co., Inc. Process for supporting and non-uniformly treating articles. Re. 28,267, 12–10–74, Cl. 204—15.

Sartell, Jack A.: *See*—
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Skilbeck, John P.: *See*—
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Szkudlapski, Alfons H.: *See*—
Rackus, John J., Skilbeck, and Szkudlapski. Re. 28,267.

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Rackus, John J., Skilbeck, and Szkudlapski. Re. 28,267.

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Amerace Corp.: *See*—
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Analog Devices, Inc.: *See*—
Brefka, Paul E. 233,909.

Anderstorps Werkstads AB: *See*—
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Ashley, Ravadean. Combined plural photograph frame and legend display. 233,874, 12–10–74, Cl. D6—234.

Astra Lakemedel AB: *See*—
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Berger, Paula H., and J. A. Birnbaum. Rack for condiment holders. 233,878, 12–10–74, Cl. D7—71.

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Berger, Paula H., and Birnbaum. 233,878.

Bower, William M., to Bangor Punta Operations, Inc. Septic tank. 233,887, 12–10–74, Cl. D23—2.

Brackemyre, Mark E.: *See*—
Van Wyngarden, Roger E., and Brackemyre. 233,916.

Brefka, Paul E., to Analog Devices, Inc. Digital panel meter. 233,909, 12–10–74, Cl. D52—6.

Brindley, Robert E., to Union Carbide Corp. Flashlight. 233,908, 12–10–74, Cl. D48—24.

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Castanis, George. Peg board puzzle. 233,901, 12–10–74, Cl. D34—15.

DCA Educational Products, Inc.: *See*—
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Mazur, Harry G. 233,876.

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Gubri, Leon. Ladder with non-slip rungs. 233,910, 12–10–74, Cl. D54—1.

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Holloway, Thomas F.: *See*—
Swenson, Roy S., and Holloway. 233,880.

Howard, John R., to Turtle Wax Inc. Handle for an applicator. 233,879, 12–10–74, Cl. D7—178.

Imperial Toy Corp.: *See*—
Kort, Fred. 233,896.
Kort, Fred. 233,903.

International Multifoods Corp.: *See*—
Osborn, Orin H. 233,915.

Jester, Denis. Table. 233,872, 12–10–74, Cl. D6—177.

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Kort, Fred, to Imperial Toy Corp. Bubble blowing wand. 233,903, 12–10–74, Cl. D34—15.

Kraftco Corp.: *See*—
Domnitz, David K. 233,882.

Laughner, Charles. Restaurant sign. 233,917, 12–10–74, Cl. D96—12.

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Lopez-Leataud, Leopoldo. Chair. 233,869, 12–10–74, Cl. D6—55.

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Marks, Kenneth S. Toy visual effect device. 233,902, 12–10–74, Cl. D34—15.

Marsh, Walter G., and J. J. Rhoades, to Topco Products Co., Inc. Sheet metal louver making device. 233,911, 12–10–74, Cl. D55—1.

Matsushita Electric Industrial Co., Ltd.: *See*—
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Mayer, John F.: *See*—
Burkart, Jacob W., and Mayer. 233,899.

Mazur, Harry G., to DCA Educational Products, Inc. Goblet. 233,875, 12–10–74, Cl. D7—13.

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Mineo, Joseph C. Pet canteen. 233,895, 12–10–74, Cl. D30—13.

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Nagele, Albert L., to Bell & Howell Co. Electronic flash unit. 233,912, 12–10–74, Cl. D61—1.

Naumovski, Vera. Sport shirt. 233,866, 12–10–74, Cl. D2—208.
Osborn, Orin H., to International Multifoods Corp. Bolus gun for calves. 233,915, 12–10–74, Cl. D83—12.
Owens-Illinois, Inc.: *See*—
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Perkins, Roy F., to Genyk Products Ltd. Pet cage. 233,894, 12–10–74, Cl. D30—4.
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Rhoades, James J.: *See*—
Marsh, Walter G., and Rhoades. 233,911.
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Roger, Harold. Bead. 233,906, 12–10–74, Cl. D45—16.
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Smith, Jack, (Gunmakers) Ltd.: *See*—
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Stubbmann, Albert, to Kohner Bros., Inc. Animal face action toy. 233,900, 12–10–74, Cl. D34—15.
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Brindley, Robert E. 233,908.
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CLASSIFICATION OF PATENTS

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NOTE.—First number, class; second number, subclass; third number, patent number

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